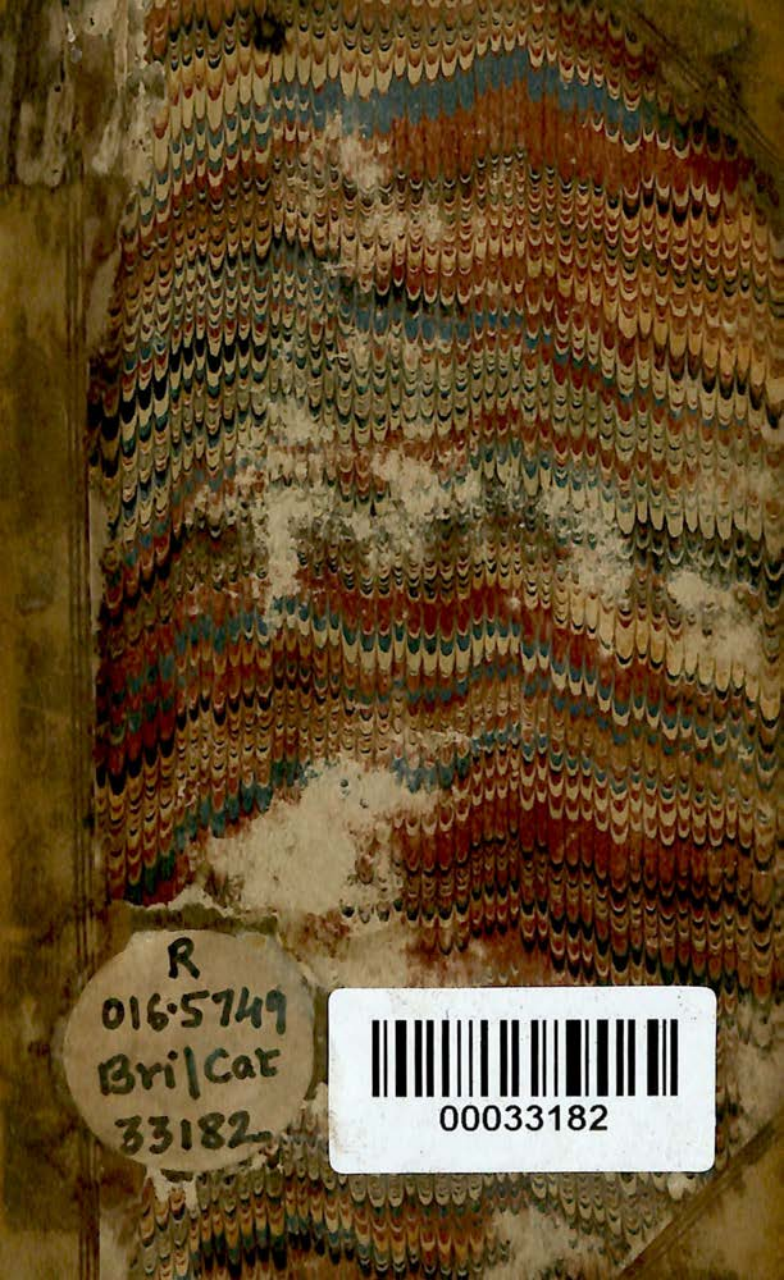
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CATALOGUE

OF THE

SPECIMENS OF AMPHIBIA

IN

THE COLLECTION

OF THE

BRITISH MUSEUM.

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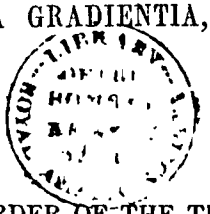
PART II.

BATRACHIA GRADIENTIA, ETC.



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PREFACE.

THE first part of this Catalogue, containing the Toads and Frogs, or Tailless Batrachians, will shortly follow; but so many additional specimens of these animals have been received in the Museum since the MS. was put into type, that it is considered advisable to defer its appearance until they can be examined, and the new ones described.

The part now printed contains the Tailed Amphibia, or Salamanders, Newts, and Sirens.

MM. Duméril and Bibron have not yet described the specimens of these families, and the death of M. Bibron, it is to be feared, has indefinitely deferred the appearance of the remainder of their work.

J. E. GRAY.

British Museum,
June 1. 1850.

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The names in italic are desiderata in the Museum Collection.

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CATALOGUE OF AMPHIBIA.

Class IV. AMPHIBIA.

Animal furnished with a distinct bony skeleton.
Skin naked, and without any bony case; very rarely with very small embedded scales.
Body variable in form.
Skull with two occipital condyles.
Head without any distinct neck.
Toes (almost always) without claws.
Ribs none, or short. Sternum often distinct.
Male without any prominent generative organs.
Respiring by cellular lungs, and often by external gills, which generally fall off as the animal reaches adult age.
Eggs with a soft shell.
Young subject to a metamorphosis.

Amphibia, Reptiles, seu A. Reptilia (partim), *Linn. Syst. Nat.* ed. 12. i. 3.
Sebæ (seu Amphibia) Reptilia (part.) *Scovoli, Introd H. N.* 460. 1777.
Batrachia *Tschudi, Batrach.* 1838.
Batraciens *Brongniart, Bull. Soc. Philom.* 1799; *Duméril, Zool. Anal.* 1806.
Batrachia (and Ophidia part.) *Rafin. Annal. Nat.* 74. 1815.
Les Batraciens (et Serpents nus) *Cuvier, Règ. Anim.* ii. 88. ed. 2. ii. 101.
Reptilia Batrachia *Oppel. Rept.* 1811.
Amphibiens *Blainv. Org. Anim.* i. tab. 5. 1822.
Batrachia, Reptiles Ictyoides ou Nudipellifères *Blainv. Bul. Soc. Philom.* 1816, 119.
Amphibia Batrachii *Cuv.; Eichwald, Zool. Spec.* iii. 163.
Dipnoa *Leuck.; Fitz. Nat. N. Class.* 63. 1826, *Syst. Rept.* 1843.
Dipnoa, or Diplonoa, Batrachia *Bonap. Amph. Eur.* 10. 1839; *Mem. Acad. Sci. Torino*, ii. 1839.

Synopsis of Orders.

A. *Nostrils enclosed in a bony case; the internal nostrils opening into the middle of the palate.*—TRITONES.

Order I. BATRACHIA.
Gill well developed, vanishing in adult age. Adult with four limbs.

Order II. PSEUDOSAURIA.
Gill rudimentary or internal. Body with four legs.

Order III. PSEUDOPHIDIA.
Gill rudimentary or internal. Body cylindrical. Legs none.

B. *Nostrils not enclosed in a bony case; the internal nostrils opening between the lips and the bones of the palate.*—SIRENES.

Order IV. PSEUDOICHTHYAS.
Gill internal. External skin scaly.

Order V. MEANTIA.
Gill well developed, retained throughout life. Skin naked.

Or they may be divided according to the structure of the skull, and arranged thus:

Subclass I. *LACERTINI.*—Skull formed of separate bones. Gills of the young (and, rarely, of the adult animal) well developed and exposed. Skin naked.

Order V. MEANTIA.
Gill permanent. Internal nostrils in inner edge of lip.

Order I. BATRACHIA.
Gill deciduous. Nostrils in a bony case, internal nostril in palate.

Subclass II. *ICHTHYODI.*—Skull solid, the bones united together. Gills enclosed under skin, often early deciduous. Neck with brachial holes. Skin with embedded scales. Body elongate, tailed.

Order II. PSEUDOSAURIA?
Internal nostril in palate. Body depressed. Legs four. Scales minute, embedded.

Order III. PSEUDOPHIDIA.
Internal nostrils in palate. Body subcylindrical. Legs none. Scales minute, embedded.

Order IV. PSEUDOICHTHYAS.
Internal nostrils in the inner edge of upper lip. Body compressed. Legs four, rudimentary. Scales large.

A. TRITONES. — *The nostrils enclosed in a bony case; the internal nostrils opening on the sides of the middle of the palate.*

ORDER I. BATRACHIA.

Skull formed of separate bones.
Nostrils enclosed in a bony case; the internal nostrils opening on the sides of the middle of the palate.
Gills of the young (and rarely of the adult animals) well developed and exposed.
Skin naked, smooth.
Body of young elongate.
Tail often deciduous.
Legs four, rarely only two.

Batraciens *Brongniart, Bull. Soc. Philom.* 1799; *Duméril, Zool. Anal.* 1806.
Batrachia *Rafin. Anal. Nat.* 74. 1815.
Batrachia and Hemibatrachia *Fitz. Syst. Rept.* 30. 33.
Amphibia Caducibranches *Latr. Fam. Nat.* 1823.

Divide into two Suborders thus: —

Suborder I. *SALIENTIA.*
Body short, depressed, without any tail.

Suborder II. *GRADIENTIA.*
Body elongate, tapering, tailed.

The details of the first Suborder are given in Part I.

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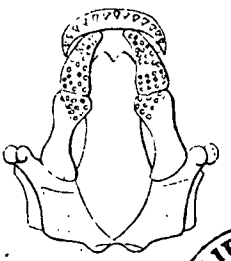

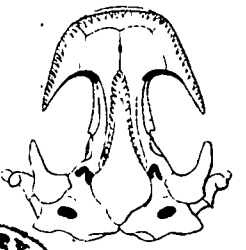

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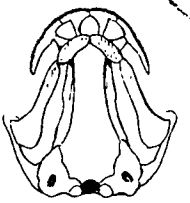

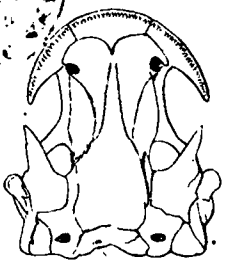

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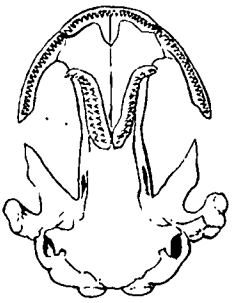

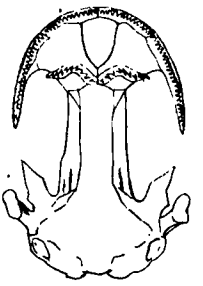

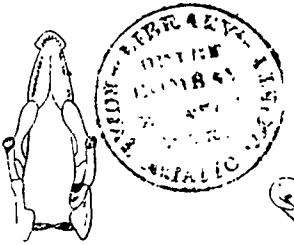

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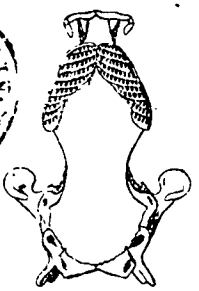

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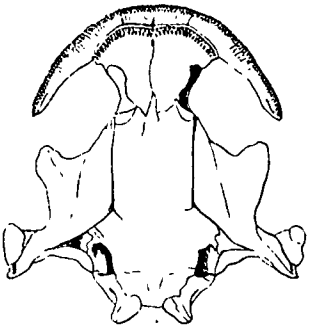

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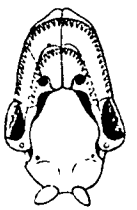

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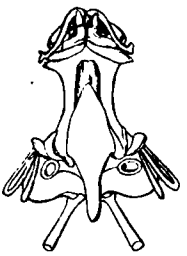

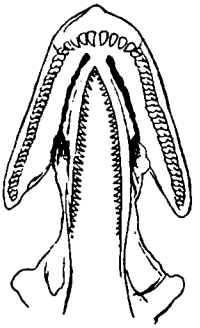

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Suborder II. *GRADIENTIA.*

Body elongate, tailed in all ages. Limbs four, weak, small, equal.
Gills well developed in the young, decaying as the animal arrives at full age, very rarely retained through life.
Teeth in both jaws, and often in the palate.
Ears hidden.
Internal nostrils in middle of palate, surrounded by bone.
Vent longitudinal.
Skin naked, smooth, or warty.
Sternum and *clavicule* none.
Ribs distinct or rudimentary.

Eggs elliptical, isolated, deposited separately at different periods, hatched in succession.

Larva elongate, conical, compressed behind. Gills exposed, on the side of the neck, over the three or four branchial slits. Fore and hind legs developed nearly at the same time. The gills are sometimes retained for a longer period, and are rarely even found withered on the side of the neck of the adult specimens.

Gradientia *Laur. Rept.* 1768.
Quadrupedes ovipari caudati (partim) *Lacép. Quadr.* 1. 1788.
Batrac. Urodèles *Duméril, Zool. Anal.* 1806.
Batrac. caudata *Oppel. Rept.* 1811.
Batrac. gradientia mutabilia *Merrem, Tent.* 1820.
Amph. caducibranchia Urodela *Dum. Fam. Nat.* 1825.
Ranæ Phaneroglossæ (part.) *Wagler, Syst.* 1830.
Amph. Urodela *Gray, Ann. Phil.* 1825, 218.; *Bell, Todd's Cyclop. Med.* 1835; *Swains. Cab. Cyc.* ii. 342.
B. urophora (part.) *Hogg, Ann. N. H.* 1839.
B. tetrapoda et dipoda *Hogg, Ann. N. H.* 1839.
A. Monopneumena caducibranchia *Hogg*, l. c. 1841.
A. M. caducibr. arcucadentia (part.) *Hogg*, l. c. 19.
Salamandrina *Müller, Isis*, 1831, 710.
A. prolatibranchia (part.) *Hogg, Ann. Mag. N. H.* 1841, 361.
Salamandrinæ *Tschudi, Batr.* 1838, 26. 91.
Urodelia *Rafin. Annal. Nat.* 78. 1815.
Urodeli *Eichwald, Zool. Spec.* iii. 164.
Ranæ (Salamandridæ) *Bonap. Faun. Ital.* ii. 4. 131., *Amph. Eur.* ii. 1839.
Salamandra *Brongn. Cuvier, R. A.* ii. 15.
Pseudosauriens ou Salamandres *Blainv. Bull. Soc. Phil.* 1816, 111.
B. U. atretodera *Baird, Amer. Batrach.* 281. 1849.

Hemibatrachia *Fitz. S. R.* 33.
Atretodères ou Salamandroides *Dum. & Bibr. Erp. Gen.* viii. 92.
Salamandridæ (partim) *Hogg, Ann. N. H.* 1839; *Bonap. Amph. Eur.* ii. 71.
Tritonia *Rafin. Annal. Nat.* 78. 1815.
Salamandridæ *Gray, Ann. Phil.* 1825, 215.

Rafinesque names, but does not describe, three genera in this suborder, viz. PALMETES, LOPHINUS, MEINUS.

Synopsis of Families.

I. *SALAMANDRIDÆ.* Palate with teeth on the inner hinder edge of the elongate palatine bones, in two diverging series. Sphenoid toothless. t. 3. f. 11. 13.

II. *MOLGIDÆ.* Palate with teeth on the outer hinder edge of the elongated palatine bones, in two converging series. Sphenoid toothless. t. 3. f. 14.

III. *PLETHODONTIDÆ.* Palatine teeth in a short series across the hinder end of each short vomerine bone, forming a cross band behind each internal nostril, and the sphenoid often covered with teeth. t. 3. f. 15.

FAM. I. SALAMANDRIDÆ.

Palatine teeth in two longitudinal series; one on the inner hinder edge of each of the elongated triangular vomerine bones. Sphenoid toothless. t. 3. f. 11. 13.
Skull with a bony orbit above the eyes; sometimes wanting.
Tongue broad, attached only slightly, free on the sides, and more or less behind.
Ribs rarely developed and mobile; generally rudimentary, immovable, or entirely wanting.

Salamandridæ *Gray, Ann. Phil.* 1825, 215.
Cryptopleura (part.) *Fitz. S. R.* 33.
Elophile (part.) *Fitz. S. R.* 33.
Hydrophili *Fitz. S. R.* 33.
Salamandrinæ (part.) *Fitz. S. R.* 33.
Tritones *Tschudi, Batrac.; Fitz. S. R.* 34.
Salamandræ (part.) *Tschudi, Batr.* t. ; *Fitz. S. R.* 33.
Salamandrina (part.) *Bonap. Fauna Ital.* ii. 131., *Amph. Eur.* 11.

Phæneropleura et Cryptopleura (part.) *Fitz. S. R.* 32.
Pleurodeles *Tschudi, Batr.* 56. 91.; *Fitz. S. R.* 33.
Pleurodelina *Bonap. Faun. Ital.* ii. 171., *Amph. Eur.*

Synopsis of Genera.

A. *Tongue moderate, attached; hinder and side edges scarcely free. Toes* 4 : 5.

a. *Palatine Teeth in two series, extending before the internal nostrils.*

1. Salamandra. Back with a series of perforated warts. Parotids large, glandular.

2. Pleurodeles. Sides with a series of holes perforated by the ribs, and a line of pores between the axilla and the groin.

b. *Palatine teeth in two series, commencing on a line with the internal nostrils.*

3. Triton. Granular. Sides with a series of pores between the axilla and the groin. Tongue oblong. Tail compressed. Parotids porous, distinct.

4. Notophthalmus. Granular. Sides with a series of pores between axilla and groin. Tongue oblong. Tail compressed. Parotids none.

5. Euproctus. Granular. Tongue rhombic. Vent with a conical protuberance. Tail compressed, round at the base.

6. Cynops. Granular. Sides not porous. Parotids large, compressed. Tail compressed.

7. Taricha. Granular. Sides not porous. Parotids indistinct. Tail compressed.

8. Bradybates. Granular. Tongue very small. Tail round at the base.

9. Lophinus. Smooth. Sides poreless. Palatine teeth in two separate series. Orbit in palate small.

10. Ommatotriton. Smooth. Sides poreless. Palatine teeth in a crowded series. Orbit in palate very large, convex.

B. *Tongue large, hinder half free. Toes* 4 : 4. *Palatine teeth in two series.*

11. Seiranota. Granular.

A. *Tongue moderate, attached; hinder and side edges scarcely free. Toes* 4 : 5. — Salamandrina.

a. *The back with a series of pierced warts on each side.*

1. SALAMANDRA.

Head thick. Eyes large. Mouth large. Tongue broad, fixed in front, granular; hinder part and sides scarcely free. Palatine teeth in two separate longitudinal series, parallel behind, but rather wider apart and arched in front. Parotids large, glandular, flat-topped.—*Body* with two series of glands down the back and tail, each ending in a pore; lateral line simple, with a group of pores on each side.—*Feet* very minute.—*Toes* 4 : 5, free.—*Tail* roundish.—*Skin* smooth.—*Ribs* slightly developed, not movable.—*Females* viviparous.

Rusconi and Cuvier have observed that in the young animal the whole vomerine is covered with teeth. *Cuvier, Os. Foss.* v. 418.

Salamandra *Laur. Rept.* 41.; *Dum. Zool. Anal.* 95.; *Oppel. Rept.* 74. 80.; *Cuvier, R. A.* ii. 99. ed. 2. ii. 115.; *Merrem, Tent.* 184.; *Rafin. Annal. Nat.* 78. 1815; *Bonap. Fauna Ital.* ii. 131., *Amph. Eur.* 66.; *Tschudi, Batrach.* 56. 91.; *Fitz. S. R.* 23.; *Gray, Ann. Phil.* 1825, 215.

1. Salamandra nigra. Black Salamander.

Black, spotless. Skin rugose, with papillæ; lateral warts very prominent. Toes depressed.

Salamandra atra *Laur. Rept.* 42. 149. t. 1. f. 2.; *Latr. Rept.* ii. 218.; *Daud. Rept.* viii. 215.; *Merrem, Tent.* 184.; *Bonap. Fauna Ital.* t. . f. 1.

Lacerta Salamandra β. *Gmelin, S. N.* i. 1067.

Lacerta atra *Wolf, Sturm, Deutsch. Fauna,* t.

a. In spirits. Styria. From Leyden Museum.

2. Salamandra maculosa. Salamander.

Black, yellow-spotted; warts on the sides numerous, prominent.

Lacerta Salamandra *Linn. Mus. Ad. Fred.* 1. 45., *Syst. N.* 1371.; *Gmelin, S. N.* 1. 1067.; *Latr. Rept.* ii. 194.

Salamandra maculosa *Laur. Rept.* 42. 151.; *Gravenh.* ; *Wagler,* ; *Fitz.* ; *Bonap. Faun. Ital.* t. , *Amph. Eur.* 67.; *Fitz. S. R.* 33.

S. maculata *Merrem, Tent.* 185.; *Tschudi, Batr.* 91.
S. vulgaris *Cloquet, Dict. Sci. Nat.* xlvii. 50.
Salamandra terrestris *Wurfb.; Ray, Syn.* 273.; *Daud. Rept.* viii. 221. t. 97. f. 1.; *Schlegel,* ; *Funke,*
Salamandra *Gesner, Quad. ov.* 80 fig.
Salamandra Corsica *Savi, N. Giorn. Pisa,* 1839, 208.; *Bonap. Fauna Ital.* t . f. ., *Amph. Eur.* 67. (with anomalous teeth.)

OSTEOL. *Cuvier, Os. Fos.* v. 406. t. 25. f. 1, 9. 10.
ANAT. *Dugès, Batrac.* t.

a. In spirits. Sardinia. Presented by Professor Bonelli.
b—d. In spirits. Europe.
e. In spirits. Black; back with two yellow streaks; belly with large yellow spots on each side. Portugal. Presented by P. B. Webb, Esq.
f. In spirits. Yellow; back with three broad black streaks. S. Europe. Portugal. Presented by P. B. Webb, Esq.
g. In spirits. Hungary. Black, with roundish yellow spots. Mr. Brandt's collection.

b. *The sides with a line of small pores between the axilla and groin.*

2. PLEURODELES.

Head rounded, rather depressed. Tongue small, nearly circular, adherent, edges slightly free. Parotids porous. Eyelid equal. — *Limbs* long. — *Toes* 4 : 5, free, clawless, elongate. — *Tail* long, thin, compressed at the base.—*Teeth* very small, acute, on the inner edge of the jaws. Palatine teeth in two distant longitudinal series, united by an arch in front, near the maxillary teeth, much in front of the line of the internal nostrils.—*Ribs* perfect, fourteen pair, pointed, perforating the skin.—*Orbit* with a peculiar bony arch above.

Pleurodeles *Michahelles, Isis,* 1830, 195.; *Tschudi, Batr.* 56. 91.; *Bonap. Fauna Ital.* ii. 113., *Amph. Eur.* 65.; *Fitz. S. R.* 33.

1. PLEURODELES WALTL.

Brown spotted, with a series of white specks on each side; beneath pale yellowish, black-speckled. Tail rather longer than rest of the body.

Pleurodeles Waltl *Michah. Isis,* 1830, 195. t. 2.; *Bonap. Fauna Ital.* t. . f. 5.; *Tschudi, Batr.* 91. t. 2. f. 1., *Mém. Sci. Nat.* t. 5. f. 1.; *Fitz. S. R.* 33.

a. In spirits. Tangier. Skin tubercular, with a black-brown horny wart in the centre of each tubercle. Back not crested. Tail compressed, with a continued fringe on edge. Grey-brown above, with a series of roundish white spots on each side; beneath whitish. Length 3¼ inches, tail 7½ inches. The tail longer; gill in a very rudimentary condition. From Mr. Fraser's Collection.

b. In spirits. Tangier. Tail shorter, the gill remaining in a contracted state on each side. From Mr. Fraser's Collection.

c, d. In spirits. Young. S. Europe? Presented by P. B. Webb, Esq.

3. TRITON.

Head rounded, convex; crown rather flat. Tongue large, oval, papillary, sides free, pointed in front. Palatine teeth numerous, in two separate longitudinal series, rather diverging behind the front, and nearly on a line with the internal nostrils. Maxillary teeth rather large. Parotids porous, a group of pores on the lores, and a line of pores on each side between the legs.—*Skin* soft, granular.—*Tail* compressed, almost the length of the body.—*Toes* elongate, slender, free or lobed, or imperfectly palmated. Plantar warts distinct.—*Ribs* very short, slender. The lips of the old specimens become enlarged, dependent.

Triton, sect. 1. *Gray* in *Griffith's A. K.* ix,
Triton *Bell, Brit. Rept.* 119.; *Fitz. S. R.* 32.; *Bonap. Amph. Eur.* 21., *Fauna Ital.* ii. 131. n. 16.
Triton sp. *Laur. Rept.* 37.; *Duméril, Z. A.* 95.; *Oppel. Rept.* 254.; *Cuvier, R. A.* ii. 99.; *Gray, Ann. Phil.* 1828, 215.; *Tschudi, Batr.* 60. 95. (not Linn. nor Lamck.)
Triturus *Rafin. Annal. Nat.* 78. 1815.
Oiacurus *Leuckart.*
Glossoliga *Bonap. Fauna Ital.* ii. 131.
Molge sp. *Merrem, Tent.* 185. 1820.

Larva:
Ichthyosaurus *Latr. Rept.* (not Kœnig.)
Proteus, part. *Laur. Rept.*

1. Triton Poireti.

Pale whitish (in spirits, perhaps bleached), with irregular purplish brown spots. Tail longer than the body and head, rather square at the base, then compressed with a sharp upper and lower edge.

Salamandra major *Gray* in *Griffith's A. K.* ix.,
Sal. fenestrata *Mus. Paris.*
Triton nebulosus *Guich. Explor. Sci. Alger. Rept.* t. 4. f. 1. (no text).
Triton Poireti *Gervais, Bull. Soc. Sc. Nat.* 1835, vi. 313., *Ann. Sci. Nat.* vii. 312.
Lacerta palustris? *Poiret, Voy. Barb.* i. 290. (not Linn.)
?Glossoliga Poireti *Bonap. Fauna Ital.* ii. 131. t. . f. 3. (young); *Fitz. S. R.* 33.

a. In spirits. N. Africa?
b. In spirits. Young? N. Africa? Tail short, very acute, only as long as the body, with an even membranous fin on each edge. Back and tail brown-spotted.

2. TRITON CRISTATUS.

Blackish, black-spotted; sides minutely white-dotted. Tail with a lanceolate bluish longitudinal band, rather below the middle; lower edge yellow or orange. Belly yellow or red, with rows of black spots, the middle spot often confluent. Parotids porous. A series of pores on each side of the back, and along each side of the belly, continued over the under side of the limbs, forking in front, going over and under the eyes. The line over the eyes and in front of the orbit is formed of two or three series. Lips of adult dilated, enlarged.

Male in breeding season: dorsal and caudal crest toothed, and separated by a notch at the loins. Female and male in winter: crest none; lower edge of tail orange. (*Penn. B. Z.* iii. t. 4.; *Laur. Rept.* t. 2. f. 4.)

Young olive-brown, dorsal line yellow; abdomen orange, black-spotted; lower edge of tail orange-red.

Triton cristatus *Laur. Rept.* 39. 146.; *Tschudi, Batrach.* 95.; *Fitz. S. R.* 34.; *Bell, Brit. Rept.* 119. fig. (adult); *Bonap. Fauna Ital.* t. . f. 1. 2.; *Bibron, P. Z. S.* 1838, 23.
Lacerta palustris *Linn. S. N.* i. 370.; *Sturm, Faun. Germ.* t.
T. americanus *Laur. Rept.* 49., from *Seba, Thes,* t. 89. f. 4, 5.
?Lac. americana *Houtt.; Gmelin, S. N.* i. 1065.
Lac. aquatica *a. Gmelin, S. N.* i. 1065. (not Linn.)
Lac. lacustris *Blumenb. Handb.* 248.
Salamandra palustris *Schneid. Amph.* i. 60.
Lac. porosa *Retzius, Faun. Suec.* i. 288. ♂
Salamandra cristata *Schneider, Amph.* i. 57. ♂; *Daud. Rept.* viii. 233.; *Cuvier, R. A.* ii. 100. ed. 2. ii. 116.
S. platyura *Daubent.*
S. laticauda *Bonnat, Enc. Méth.* t. 2. f. 4.

Molge palustris *Merrem, Tent.* 187.; *Gravenh. Delic. Mus. Vrat.* 85.
Salamandra platicauda *Rusconi*, t. 1. f. 3, 4., t. 2. f. 1, 2.
Lacertus aquaticus *Gesner, Quad. ov.* 31. fig.
Salamandra aquatica *Ray.*
Triton Bibronii *Bell, Brit. Rept.* 129. fig. (young.)
Triton marmoratus *Bibron, Proc. Z. Soc.* 1838, 23. (not Latr.)
Salamandra carnifex *Schneider, Amph.* i. 71.
Lac. palustris δ. *Gmelin, S. N.* i. 1065.
Triton carnifex *Laur.* 38. t. 2. f. 3.; *Bonap. Fauna Ital.* t. . f. 3.
S. pruniata *Schneid. Amph.* i. 69.
Larva, *Penn. B. Z.* iii. t. 4.

Osteol. *Cuvier, Os. Fos.* vii. 8. t. 26. f. 6, 7, β.; *Dugès, Batrac.* t.

a. In spirits. Not crested. Exeter. Presented by W. E. Leach, M.D.
b. In spirits. Not crested. Wandsworth. Presented by W. E. Leach, M.D.
c, d. In spirits. Half-grown. Bayswater. Presented by R. Latham, Esq.
T. Bibronii *Bell, Brit. Rept.* 129.
e—g. Larvæ in different stages. Cobham, Surrey. Presented by W. E. Leach, M.D.
h—k. In spirits. Back highly crested. England.
l. In spirits. Nape, crown, and tail low-crested. Europe.
m. In spirits. Crested. Near London. Presented by J. E. Gray, Esq.
n. In spirits. Small. Not crested. Presented by W. E. Leach, M.D.
o—q. In spirits. Larvæ of different sizes. Cobham, Surrey. Presented by W. E. Leach, M.D.
r—u. In spirits. Adult, back with only a slight ridge. Turin. Presented by Professor Bonelli.
v. In spirits. Adult, back with only a slight ridge. Russia?
x—z. In spirits. Nearly full-grown, with short irregular gills on each side. Brown, black-spotted; sides white dotted; belly yellow, spotless. Hamburg. Mr. Brandt's Collection.

Var.? Triton marmoratus *Bonap. Fauna Ital.* t., *Amph. Eur.* 39. (not Cuvier.)

3. Triton marmoratus.

Olive-brown. Back grey-marbled and black-dotted. Lower part of sides and belly white-dotted. Head grey, black-dotted and spotted. Dorsal streak and under side of tail orange or yellow.

Salamandra marmorata *Cuvier, R. A.* ii. 115.
Triton Gesneri *Latr. Rept.* ii. 221.
T. marmoratus *Latr. Rept.*; *Daud. Rept.* viii. 241.; *Tschudi, Batr.* 5.
?Salam. elegans *Lesson, Rev. Zool. Soc. Cuvier*, 1839, 199. (young?)
Osteol. t. 3. f. 10. f. 11. *Dugès, Batrac.* t. 14. f. 85. 88., cop. *Van der Hoeven, Tijdsch. N. Gesch.* 1838, t. 1. f. 12.

a, b. Adult, and half-grown. Oporto. Presented by Col. Owen, K.C.A.
c. In spirits. Brown, dorsal line white, adult discoloured. Europe.
d, e. Side grey-marbled, dorsal line white, belly spotless; young. S. Europe. Presented by P. B. Webb, Esq.

4. Triton? alpestris.

Lead-coloured, beneath orange, spotless; side with series of black spots. Nose rather blunt. Back warty. Belly smooth. Dorsal crest none. Tail shorter than the body, compressed, upper and lower edges acute.

Salamandra aquatica a nullo hactenus descriptus *Wurfb. Salam.* 64. t. 2. f. 4.
Triton alpestris *Laur. Rept.* 38. t. 2. f. 4.; *Bonap. Faun. Ital.* t. . f. 2.; *Sturm, Fauna Germ.* t.; *Tschudi, Batr.* 95.
T. Wurfbainii *Laur. Rept.* 38.
T. salamandroides *Laur. Rept.* t.; *Schrank, Faun. Boic.*
Proteus tritonius *Laur.* 37. t. 2. f. 2. (larva.)
Lacerta lacustris ε. *Gmelin, S. N.* i. 1065.
Salamandra alpestris *Bechst.* in *Lacép.* ii. 260.; *Schneid. Amph.* i. 71.
S. ignea in *Bechst.* in *Lacép.* ii. 263.
S. Wurfbainii *Latr. Rept.* ii. 245. t.
Lacerta gyrinoides *Merrem, Schrift. Berl. N. F.* ix. 194. t. 6.
Molge Wurfbainii *Merrem, Tent.* 186.
Molge alpestris *Merrem, Tent.* 187.
Lacerta Triton *Merrem, Tent.* 187.
Molge ignea *Gravenh.*; *Merrem, Rept.* 186.
Salamandra rubriventris *Daud.* viii. 239. t. 98. f. 1.
Salamandre ceinturée *Latr. Salam.* 52. t. 5. f. 5.
Salamandra cincta *Daud. Rept.* viii. 259

a.? In spirits. Not good state. Back warty, grey, black-marbled. Sides white-dotted, with several series of small black spots; beneath yellow, spotless. Collar under throat black-spotted. Europe.
b. In spirits. Back blackish: side and sides of tail black-spotted; beneath, yellow spotless: lower lip with a

regular series of black spots. Hungary. Mr. Brandt's collection.

Var. 1. Skin very smooth, scarcely warty.

T. alpestris apuanus *Bonap. Fauna Ital.* t. . f. 3., *Amph. Eur.* 70.
Hab. Italy. Mus. Bonaparte.

5. ? Triton nychthemerus *Michah.*, *Bonap. Fauna Ital.* t. . f. 5., *Tschudi*, *Batrac.* 95. "is perhaps the young of T. marmorata? or T. cristata." *Bonap. Amph. Eur.*

6. Triton Ermanni *Wiegm.*, quoted by *Tschudi*, *Batrac.* 95., is unknown to me.

4. NOTOPHTHALMUS.

Head flat, crown ridged. Skin granular, rugose. Tongue small, oblong, attached, edges scarcely free. Palatine teeth in two series, rather wider apart behind. Internal nostrils large, oblong, transverse. Parotids none, poreless. — *Sides* with a series of pores.— *Toes* 4 : 5, free, depressed; soles warty. —*Tail* compressed. Lower sides of thighs of males? with a callous plaited band.

A bony orbit above the eye, formed of the union of processes from the frontal and tympanic bones, enclosing a foramen through which pass the flexor muscles of the jaw, similar in this respect to *Cynops*, *Pleurodeles*, and *Euproctus*. The ossification extending to the hyoid apparatus, carpus, and tarsus. Vertebræ much compressed, with high crests. Three apertures in the skin of the cheeks behind the eye, not communicating with the cavity of the mouth. Hind feet much flattened; first and fifth hind toes nearly rudimentary. *Baird*, l. c. 281. 1849.

Dr. Holbrook describes this species as having a transverse series of palatine teeth, but they are not apparent in our specimens. The genus chiefly differs from Triton in the want of parotids.

Triturus (and Notophthalmia and Diemictylus) *Rafin. An. Nat.* n. 24. March, 1820.
Notophthalmus sp. *Baird*, *Amer. Batr.* 1849.

1. Notophthalmus miniatus.

Head, body, and tail brownish red, brown-spotted; throat and abdomen orange red; back with two rows of deep red, symmetrical, black-edged spots. Tail longer than the body, tip compressed.

Triturus miniatus *Rafin. Ann. of Nat.* n. 24. 1820.
Sal. Stellio *Say, Amer. Jour. Sci.* i. 264. (not Catesby.)
Sal. symmetrica *Harlan, Jour. Acad. N. S. Phil.* v. 158. 1825, *N. A. Rept.* 67., *Med. and Phys. Res.* 98.; *Holbrook, N. A. Herp.* v. 57. t. 17.; *Schlegel, Faun. Japon.* 119.
Salamandra Greenii *Gray, Griffith, A. K.* ix.
Molge ocellata *Bell, MS.*
Tristella symmetrica *Gray, MS. B. M.*
Notophthalmus miniatus *Baird*, l. c. 284

a. In fluid. N. America. Presented by T. Bell, Esq. S. Greenii *Gray, Brit. Mus.*
b. In spirits. N. America. Presented by T. Bell, Esq. Molge ocellata *Bell, MS.*
c, d. In spirits. N. America. Presented by Jacob Green, M.D.
e, f. In spirits. N. America. Presented by E. Doubleday, Esq.
g, h. In spirits. N. America. From the Leyden Museum.

Var. Nearly smooth; spots on sides of back oblong, one or more rarely confluent.

i—k. In spirits. N. America, S. Carolina. Presented by Dr. R. Harlan.

2. NOTOPHTHALMUS VIRIDESCENS.

"Head and body above olive-brown, with two rows of bright vermilion circular vertebral spots. Throat and abdomen orange, black-dotted. Tail longer than the head and body, compressed in its whole length. Tongue broad, flat, entire, adherent, except on its front and sides."

Salamandra dorsalis *Harlan, Jour. Acad. N. S. Phil.* v. 201. 1828; *Storer, Rept. Mass.* 59.
S. millepunctata *Storer, Boston Jour.* n. 11. ii. 60.
Triton dorsalis *Holbrook, N. A. Herp.* v. 77. t. 25.
Triturus (Diemictylus) viridescens *Rafin. Annal. of Nat.* n. 22. 1820.
Triton millepunctata *Dekay, Rept. N. York*, 84. t. 15. f. 34.
Notophthalmus viridescens *Baird, Batr. Amer.* 284. 1849.

Hab. Maine, Pennsylvania, Georgia.

5. EUPROCTUS.

Tongue large, depressed, lateral and hinder margin scarcely free. — Maxillary *teeth* rather large, strong, curved; palatine series

two, straight, diverging. —*Parotids* none.—*Skin* granulose (in young smooth, soft); anal regions of the adult produced into a cone, upper foramen roundish at base of tail.— *Tail* rather long, subcompressed, round at the base.—*Limbs* strong.— *Toes* 4 : 5, long, slender, free; plantar warts none; middle toe longest.—*Ribs* well developed, mobile.—*Orbit* with a peculiar bony arch above.

Bibron represents the tongue as small and rhombic, and the hinder end of the series of palatine teeth as arched and diverging.

Euproctus *Gené; Bonap. Fauna Ital.* ii. 95. 131. n. 13., *Amph. Eur.* 21.; *Berthold, Lehrb. Zool.* 211. 1845;
?Megapterna *Savi, N. Gior.* 1839; *Bonap. Faun. Ital.* ii.
Pelonectes *Fitz. S. R.* 33.
Salamandrina (part.) *Fitz. S. R.*

1. EUPROCTUS PLATYCEPHALUS.

Olive brown, white-granulated. Centre of under side cinereous, black dotted and spotted. Tail rather longer than the body. Male thighs smooth; female thighs spurred behind. Young ashy brown, very minutely black-dotted; beneath yellowish ash. Larva brown; back with two series of ferruginous spots. Tail short, two-edged.

Molge platycephala *Otto; Gravenh. Mus. Wrat.* 84. 3.
Triton Rusconi *Gené, Mus. Tigur.*
Euproctus Rusconi *Gené, Syn. Rept. Sard.* 78. t. 1. f. 34.; *Bonap. Fauna Ital.* t. .; *Berthold, Lehrb. Zool.* 211. 1845; *Bibron, Explor. Sci. Algérie, Rept.* t. 4. f. 2. no text.
?Megapterna montana *Savi, Nuov. Giorn. Pisa,* 1839, 211.; *Bonap. Fauna Ital.* t. 62.
Euproetus platycephalus *Bonap. Amph. Eur.* 68., *Fauna Ital.* t. . f. 1.
Pelonectes platycephalus *Fitz. S. R.* 33.

Hab. Sardinia and Corsica. Mus. Bonaparte, Rome.

c. *The sides without any series of pores between the axilla and groin.*

6. CYNOPS.

Head broad, crown flat, muzzle prominent. Parotids very large, swollen, compressed, rounded; and glands on the sides of the neck porous.—*Body* short.—*Skin* granulose. Sides without any series of pores.—*Tail* compressed, smooth.—Palatine *teeth* small, in two separate longitudinal series, rather diverging behind. (t. 3. f. 13.)—*Tongue* very small, suborbicular, adherent, slender,

fleshy, scarcely free on the edges. — *Feet* short, strong. — *Toes* 4 : 5.—*Ribs*———? —*Skull* broad, with a distinct zygomatic arch.

Cynops *Tschudi, Batrac.* 94.; *Bonap. Fauna Ital.* ii. 131. n. 11.; *Fitz. S. R.* 33.
Pelonectes sp. *Fitz. S. R.* 33.
Salamandrina (part.) *Fitz. S. R.* 33.

1. CYNOPS PYRRHOGASTER.

Brown, beneath bright red, black-spotted.

Molge pyrrhogastra *Boie, Isis*, 1826, 215.
Cynops subcristatus *Tschudi, Batr.* 94. t. 2. f. 5.
Salam. subcristata *Schlegel, Fauna Jap.* vii. t. 4. f. 1. 2, 3. t. 5. f. 7, 8., *Abbild.* t. 40. f. 1. 3.

OSTEOL. t. 3. f. 13. *Tschudi, Batr.* t. 2. f. 5.; cop. *Schlegel, Fauna Japon.* t. 5. f. 7, 8. (palatine teeth omitted.)

a—c. In spirits. Japan. From the Leyden Museum.

7. TARICHA.

Head broad, crown flat, granular. Tongue roundish, attached; hinder and side edges only slightly free. Palatine teeth in two parallel nearly close series. Parotids swollen, porous. — *Skin* granular. Sides with a black line, but without any line of pores.—*Tail* elongated, compressed.—*Toes* 4 : 5, free, depressed. — Postorbital apophysis distinct.

Notopthalmus (part.) *Rafin.; Baird, Amer. Batr.* 284. 1849.

1. TARICHA TOROSA.

Black, with scattered, elevated, roundish, granular tubercles. Chin, throat, abdomen, and beneath, yellow mingled with very minute pale dots. Tail rather longer than the head and body, rounded at the base, compressed at the end, with a slightly elevated keel on the two edges. Length six inches. Toes 4 : 5, inner very small.

Triton torosus *Esch. Zool. Atlas*, iii. 12. t. 21. f. 15. (skull.)
Notophthalmus torosus *Baird, Amer. Batr.* 284.
Salamandra Beecheyi *Gray* in *Griffith's A. K.* i. 107.; *Zool. Beechey's Voy.* t. 31. f. 3. 1839.
Triton Ermanni *Wiegm.; Ermann, Reise*, 1835, *Arch.* 1836.
T. granulosus *Skelton, Sillim. Jour.* vii. 202. 1849.
Pleurodeles Californiæ *Bibron* in *Mus. Zool. Soc.*

a, b. In spirits. California, Monterey.

2. TARICHA? LUGUBRIS.

Head large. Eyes very prominent. Tail rather longer than the body, which is cylindrical. Head, tail, extremities, and the rest of the animal, dark olive above, lighter beneath. An indistinct, irregular row of yellowish spots on each side; several small spots. Palatine teeth ——— ?

Salamandra lugubris *Halliwell, Journ. A. N. S. Philad.* 1848, 126.

Hab. Monterey, Upper California.

This species wants further examination.

8. BRADYBATES.

Head small. Muzzle rounded. Forehead compressed. Palatine teeth few. Tongue very small, papillary, entirely adherent. External nostrils under the eyes. Parotids indistinct. — *Limbs* short.—*Feet* small. — *Toes* 4 : 5, free. — *Tail* short, roundish, turgid at the base.—*Ribs* distinct.

Bradybates *Tschudi, Batr.* 56. 91.; *Bonap. Amph. Eur.* 66., *Fauna Ital.* ii. 131.

1. BRADYBATES VENTRICOSUS.

Brown, with obsolete very small transverse lines. Tail much shorter than the body.

Bradybates ventricosus *Tschudi, Batr.* 91. t. 2. f. 2.; *Bonap. Amph. Eur.* 66., *Fauna Ital.* t. . f. 4.; *Fitz. S. R.* 33.

Hab. Spain. Mus. Neuchâtel, and Mus. Bonaparte, Rome.

9. LOPHINUS.

Parotids and lines on the head porous.—*Skin* smooth (or minutely granular when on land).—*Sides* with a blood-vessel, but no series of pores between the axilla and groin.—*Tongue* small, oblong.—Palatine *teeth* in two close longitudinal lines gradually diverging behind.—*Orbits* in palate slightly convex.—*Toes* 4 : 5, free, lobed, or webbed. — *Tail* compressed. — Back and tail of male with a continued crest.

Lophinus *Rafin. Anal. Nat.* 78. 1815.
Triton sp. *Tschudi, Batrac.* 95.; *Bonap. Amph. Eur.* 70, 71.
Lissotriton sp. *Bell, Brit. Rept.* 332.; *Fitz. S. R.* 33.
Triton, § 2. *Gray* in *Griffith's A. K.* ix.

1. LOPHINUS PUNCTATUS.

Greenish or brown, black-spotted and dotted, beneath red and yellow. Head black-streaked. Fin of the back of the male high, continued on back and upper and lower side of tail, scolloped on the edges; of the female, low on the back, higher on both edges of the tail, entire. Toes separate; of the males in summer fringed with membrane, of young simple. Palatine teeth in two very close series.

Triton parisinus *Laur. Rept.* 40.
Lacerta aquatica *Linn. S. N.* i. 370. ♂
L. aquatica β. *Gmelin, S. N.* i. 1106.; *Shaw, Zool.* iii. 298. f. 83. (not Linn.)
L. Triton *Retz. F. Suec.* i. 288.
L. Salamandra ε. *Gmelin, S. N.* i. 1106.
L. tæniata mas *Sturm, Fauna*, t.
L. maculata *Sheppard, Linn. Trans.* vii. 53.
Salamandra palmata *Schneid. Amph.* i. 72.
Salamandra tæniata *Bechst.; Schneid. Amph.* i. 58.; *Sturm, Faun. Deut.* t.
S. exigua *Rusconi*, t. 1. f. 1, 2. (not Laur.)
S. elegans *Daud. Rept.* viii. 255.
S. punctata *Daud. Rept.* viii. 257.; *Cuvier, R. A.* ii. 99.
S. palustris *Bonelli.*
Molge punctata *Merrem, Tent.* 186.
Triton punctatus *Bonap. Fauna Ital.* t. . f. 4., *Amph. Eur.* 70.; *Selys, Fauna Belg.* i. 293. t. 5. f. 3, 4. ♂ ♀
Triton lobatus *Otth.; Tschudi, Batr.* 95.; *Bonap. Fauna Ital.* t. . f. 4.
Molge palmata *Merrem, Tent.* 186.
Salamandra palmipes *Latr. Rept.* ii. 240.; *Daud. Rept.* viii. 253. t. 98. f. 2.
Lacerta vulgaris *Linn. S. N.* i. 370. (female or male in winter, when on land.)
Triton palustris *Laur. Rept.* 39. t. 4. f. 2.
Salam. palustris *Schneid. Amph.* 60.
Triton exiguus *Laur. Rept.* 41. t. 3. f. 4.; *Bonap. Faun. Ital.* t. . f. 5. (young.)
Salam. abdominalis *Daud. Rept.* viii. 250.
Lissotriton punctatus *Bell, Brit. Rept.* 132. f. . (young.)
Liss. palmatus *Bell, Brit. Rept.* 139. f. iii. (aged.)
Brown Lizard *Penn, B. Z.* 29. iii. t. 3.
Common Newt *Shaw, Zool.* ii. 295.
Molge cinerea *Merrem, Tent.* 183.

LARVA: Proteus tritonius *Laur. S. M.* 37. t. 2. f. 2.

OSTEOL. *Dugès, Batr.* t. 14. f. 9, 10. (os hyoides.)

Var. 1. Sides and belly with large black spots.

Lissotriton palmipes *Bell, Brit. Rept.* 139. f. (aged.)
Salam. punctata *Latr.* 31. t. 6. f. 6 a.

a—d. In spirits. Male in summer, of various sizes. Wandsworth. Presented by W. E. Leach, M.D.

e. In spirits. Male in winter? Near London.

Var. 2. Brownish, with small spots or mottlings on the belly, and a narrow white streak along the lower part of each side; none on the tail.

Salam. abdominalis *Latr.* t. 5. f. 4 a.?

f—h. In spirits. Near London.

Var. 3. Pale brownish with a darker streak on each side of the back, a few spots on the belly, and paler on the side, sometimes forming interrupted lines. Lips often dilated.

S. elegans *Daud.?*

i. Spirits. Adult.

j. In spirits.

k—m. In spirits. Turin. Presented by Professor Bonelli.

n—p. In spirits. Larva. Cobham, Surrey.

2. LOPHINUS PALMATUS.

Pale brown, varied. Head black, dotted and marbled. Fin of the back of male and female continued, entire, low on the back, higher on the tail. Toes of males united, completely webbed, moderate. Palatine teeth in two rather distant series.

? Triton palustris *Laur. Rept.* t. ♀
Salamandra exigua *Laur. Rept.* t. ♀ (young.)
S. abdominalis *Daud. Rept.* t. ♀
S. cincta *Daud. Rept.* viii. 259. ♀ (not Latreille.)
Triton palmatus *Otth.*; *Bonap. Fauna Ital.* t. , *Amph. Eur.* 71.; *Selys, Fauna Belg.* i. 293, t. 5. f. 1. ♂ f. 2. ♀; *Fitz. N. Class.*; *Tschudi, Batr.*
Salamandra palmata *Cuvier, R. A.* ii. (not Schneider.)

a, b. In spirits. Nottingham. Presented by W. Higginbottom, Esq.

10. OMMATOTRITON.

Skin smooth or minutely punctured.—*Sides* without any series of pores between the axilla and groin.—*Tongue* large, rounded in front.—*Parotids* indistinct, porous.—Palatine *teeth* in two longitudinal lines, quite close together in front, rapidly diverging at the hinder end, crowded between the very convex large orbital

prominences of the palate.—*Toes* 4 : 5, free.—*Tail* compressed.—Male with a high toothed dorsal and caudal crest, interrupted over the loins.

Lissotriton (part.) *Bell, Brit. Rept.* 141.

1. OMMATOTRITON VITTATUS.

Pale grey, closely black-spotted. Tail nearly black. Side of abdomen and middle of tail with a broad white streak, beneath white. Throat black-dotted. Male in summer with a high toothed dorsal and caudal fin, the base interrupted over the loins. Toes separate, webbed, slightly finned.

Molge vittatus *Gray, B. M.* 1830.
Triton vittatus *Jenyns, Brit. Vert.* 305.; *Valenc. Mus. Paris*, fide *Guérin, Icon. Règ. Animal*, 17. t. 28. f. 2.
Lissotriton palmipes var. *Bell, Brit. Rept.* 141. fig.

a—c. In spirits. Lycia? England? Presented by J. E. Gray, Esq. *a.* Specimen figured by Mr. Bell.

According to M. Guérin this species is found in Lycia. *Icon. Règ. Anim.* p. 17.

B. *Tongue large, hinder half free. Toes* 4 : 4.—Seiranotina.

11. SEIRANOTA.

Head angular. Eyes large. Nostrils lateral. Tongue large, oblong, cordate; side edges, and hinder half free. Palatine teeth numerous, in two series, close, diverging and forming an equal-sided triangle behind. Teeth very minute. Parotid none.—*Tail* roundish, elongate.—*Body* densely warty. Back and tail with a bony crest.—*Fingers* and *toes* four, short, thick.—*Ribs* well developed, scarcely movable.

Seiranota *Barnes, Silliman's Jour.* xi. 268. 18.; *Bonap. Fauna Ital.* ii. 131., *Amph. Eur.* 33.
Salamandrina *Fitz. N. Class.* 1826, *S. R.* 33.; *Bonap. Fauna Ital.; Gravenh. Del. Mus. Wrat.* 88.
Salamandra sp. *Savi, Cuvier, R. A.* ii. 115.

1. SEIRANOTA PERSPICILLATA.

Black. Head with a triangular reddish spot; beneath white, black-spotted; under part of thighs and tail reddish.

Le Trois Doigts *Lacép. Q. ov.* 1496. t. 36.; *Latr. Rept.* ii. 258. f.
Salamandra ter-digitata *Bonn. Oph.* t. f.
S. tridactyla *Daud. Rept.* viii. 261.

Molge tridactylus *Merrem, Tent.* 183.
Salamandra perspicillata *Savi, Bib. Ital.; Cuvier, R. A.* ii. 118.
Seiranota condylura *Barnes, Silliman's Amer. J. S.* xi. 268.
Salamandrina perspicillata *Fitz. N. Class.* 41., *S. R.* 33.; *Bonap. Faun. Ital.* t. .; *Gravenhorst, Delic. Wrat.* 88.
Seiranota perspicillata *Bonap. Faun. Ital.* ii. 131., *Amph. Eur.* 66.

a—e. In spirits. Lucca. Presented by J. Browning, Esq.
f, g. In spirits. Dalmatia. From Dr. Heckles's Collection.

Fam. II. MOLGIDÆ.

Head depressed.
Orbit not bony above.
Tongue large, adherent.
Palatine *teeth* in two converging series, each line being in the outer hinder edge of the elongated angular vomerine bones. Sphenoid toothless. t. 3. f. 14.
Ribs rudimentary or wanting.

Synopsis of Genera.

1. Hynobius. Parotids none.
2. Molge. Parotids large, glandular.

1. HYNOBIUS.

Head depressed; crown convex. Muzzle rounded. Tongue very large, elongate, quite entire, adherent. Palatine teeth in two central series, arched in front to the inner nostrils. Parotids indistinct. — *Sides* plaited. — *Limbs* short, thick. — *Tail* short, ensiform, round at the base.

Hynobius *Tschudi, Batr.* 60. 94.; *Bonap. Faun. Ital.* ii. 131. n. 12.; *Fitz. S. R.* 34.
Salamandra (part.) *Schlegel, Faun. Jap.*

1. Hynobius nebulosus.

Pale brown, slightly clouded, rather paler beneath.

Hynobius nebulosus *Tschudi, Batr.* 94.
Sal. neb. *Schlegel, Fauna Jap.* t. 4. f. 7—9., *Abbild.* t. 40. f. 7—8. (9, 10. jun.)

a, b. In spirits. Japan. From the Leyden Museum.

2. MOLGE.

Head thick. Parotids large, depressed. Tongue large, adherent along the centre. Teeth of the palate in two long oblique diverging series, rather arched in front to the inner nostrils. (t. 3. f. 14.)—*Feet* short, thick.—*Collar* large.—*Tail* thick, rounded, extreme tip compressed.—*Skin* very smooth.

Pseudo-Salamandra *Tschudi, Batr.* 56. 91. 1838; *Fitz. S. R.* 33.
Molge sp. *Merrem, Tent.* 185.
Molge *Bonap. Fauna Ital.* ii. 131. n. 3.

1. MOLGE STRIATA.

Black; beneath whitish and black varied.

Pseudo-Salamandra nævia *Tschudi, Batr.* 92.
Molge striata *Bonap. Faun. Ital.* ii. 131.
Molge striata (part.) *Merrem, Tent.* 185.
Salamandra nævia *Schlegel, Fauna Japon.* t. 4. f. 1, 2, 3., t. 5. f. 9. 10., *Abbild.* t. 39. f. 4.
Salamandre schisteuse *Schlegel, Fauna Japon.* 127.?

OSTEOL. t. 3. f. 14. *Schlegel, Faun. Japon.* t. 5. f. 9, 10. (skull.)

a—d. In spirits. Japan. From the Leyden Museum.

FAM. III. PLETHODONTIDÆ.

Palatine *teeth* forming an interrupted cross series in front of the palate, between the internal nostrils, each series running across the hinder end of the broad vomerine bones. The sphenoid with two more or less broad, sometimes confluent, series of teeth, which are rarely wanting. t. 3. f. 15. Paratoid indistinct.—*Skin* smooth, rarely granular, without any series of pores.

Dr. Holbrook's description of the palatine teeth in many instances, and sometimes of the tongue, does not agree with the specimens in the British Museum.

Dr. Baird's Revision of N. American Tailed Batrachia, in *Jour. Acad. N. S. Philad.* n. s. i. 281., Oct. 1849, appears more accurate.

Synopsis of Genera.

A. *Tongue broad, adherent, only slightly free on the sides. Sphenoid toothless.*

a. *Toes and Fingers clawed. Hind Legs dilated.*

1. ONYCHODACTYLUS. Toes 4 : 5, free.

b. *Toes and Fingers not clawed.*

2. HETEROTRITON. "Toes 4 : 5, slightly webbed; outer toe fringed. Tongue large, circular; front slightly movable. Sphenoid (? Palatine) teeth in a transverse group."
3. XIPHONURA. Toes 4 : 5. Tongue circular. Tail much compressed.
4. AMBYSTOMA. Toes 4 : 5, free. Tongue oblong. Tail tapering rounded below, keeled above.

B. *Tongue broad, expanded, attached the whole length by a central line; sides and back edges free. Sphenoid toothed.*

5. PLETHODON. Toes 4 : 5, free. Hinder part of tongue shortly free.

C. *Tongue broad, expanded; front half attached by a central line, hinder half free, exsertile. Sphenoid toothed.*

6. DESMOGNATHUS. Toes 4 : 5.
7. HEMIDACTYLIUM. Toes 4 : 4, free. Hinder part of tongue large, and great part free.

D. *Tongue peltate, subcircular, free all round, only attached by a cylindrical central pedicel from a sheath.*

8. BATRACHOSEPS. Toes 4 : 4, free. Body very long. Legs far apart.
9. SPELERPES. Toes 4 : 5, free. Body thick.
10. GEOTRITON. Toes 4 : 5, hinder ones webbed to the tip.
11. ŒDIPUS. Toes 4 : 5, very short, webbed to the end.

E. *Tongue peltate, very large, attached by a central cylindrical pedicel and by a slight process on the front edges.*

12. ENSATINA.

A. *Tongue broad, adherent, hinder side edges only free. Sphenoid toothless. Carpus and Tarsus ossified in the adult.* — Amby-stomina.

a. *Toes and Fingers clawed. Hind Legs dilated.*

1. ONYCHODACTYLUS.

Head broad, rounded; crown flat. Eyes large, prominent. Parotids none. Tongue large, ovate, acute. Palatine teeth in two

arched series; sphenoid toothless. t. 3. f. 15. Collar and lateral plaits distinct.—*Feet* long, thick.—*Toes* 4:5, free, clawed. The hinder edge of outer hind foot dilated.—*Tail* elongate, roundish.

Onychodactylus *Tschudi*, *Batr.* 57. 92.; *Bonap. Faun. Ital.* ii. 331. n. 5.; *Fitz. S. R.* 33.
Dactylonyx *Bibron*, *MS.* fide *Bonap.*
Onycopus *Dum. & Bib. MS.*, *Erp. Gen.* viii. 4.

1. ONYCHODACTYLUS JAPONICUS.

Purplish. Back with a broad pale streak expanded over the crown. Claws black.

Onychodactylus Schlegeli *Tschudi*, *Batr.* 92.
Salam. unguiculata *Schl. Fauna Japon.* vii. 65. f. 1—6.
Lacerta japonica *Gmel. Houttuyn*, *Vert.* ix. t. 9. f. 3.
Lac. Thunbergii *Donnd.*; *Thunb. N. Schw. Abh.* viii. t. 4.
Molge striata (part.) *Merrem*, *Tent.* 185.
Onychodactylus japonicus *Bonap. Fauna Ital.* ii. 131.
Onycopus Sieboldii *Dum. & Bibr. MS.*, *Erp. Gen.* viii. 4.
OSTEOL. t. 3. f. 15. *Fauna Jap.* t. 3. f. 6.

a, *b*. In spirits. Adult and larva. Japan. From the Leyden Museum.

b. *Toes and Fingers not clawed.*

2. HETEROTRITON.

"*Head* large, depressed. Muzzle full, rounded, flattened above. Nostrils anterior, superior. Eyes large. Mouth large. Tongue broad, circular, only slightly movable on its anterior and lateral margin. Palatine teeth in a small group, behind each internal nostril. Sphenoid teeth in a large transverse group, in the middle of the palate.—*Fore limbs* short, thick. Fingers four.—*Hinder limbs* much larger. Toes five. Outer hinder toe fringed on its outer edge.—*Tail* compressed." *Holbrook.*

Triton sp. *Holbrook*, *N. A. Herp.* 85.
Salamandra sp. *Green*, *J. Acad. N. S. Phil.* vi. 254.

1. HETEROTRITON INGENS.

Bluish slate-coloured, with pale subovate spots. Belly slate-coloured.

Salamandra ingens *Green*, *J. Acad. N. S. Phil.* vi. 254.
Triton ingens *Holbrook*, *N. Amer. Herp.* v. 85. t. 29.

Hab. Western Waters of N. America, Tennessee, Louisiana.

3. XIPHONURA.

Head large, rounded; crown convex. Palate flat, broad. Palatine teeth in a continued transverse line, behind the internal nostrils. Sphenoid with a few scattered teeth. Tongue large, broad, attached, free on the edges.—*Feet* strong, large. Toes elongate, free; end callous.—*Skin* densely granular.—*Tail* much compressed, elongate, ensiform.

Dr. Holbrook incorrectly describes the "Tongue small, round, pedunculated, slightly attached in front. Palatine teeth minute, in a transverse row behind the nares. Sphenoid with two longitudinal series to the hinder part of the palate."

Xiphonura *Tschudi, Batr.* 61. 95.; *Bonap. Fauna Ital.* ii. 131. n. 17.; *Fitz. S. R.* 34.
Salamandra sp. *Green, Harlan, Holbrook.*
Triton sp. *Holbrook, N. A. Herp.* 77.
Ambystoma β. *Baird, J. A. N. S. Phil.* 1849, 281.

1. XIPHONURA JEFFERSONIANA.

Head very large. Eyes full and prominent. Body cylindrical, elongate. Light brown above, with azure spots. Tail as long as the body, compressed at the tip.

Salamandra Jeffersoniana *Green, Maclurian Lyceum*, i. 4. 1827; *Harlan, M. and P. Res.* 98., *N. A. Rept.* 85. note; *Holbrook, N. A. Herp.* v. 51. t. 14.; *Schlegel, Faun. Japon.* 120.
S. variolata var. *Harlan, N. A. Rept.* 18.
Xiphonura Jeffersoniana *Tschudi, Batr.* 93.
Triton niger *Dekay, Rept. N. York*, 85. t. 1. 5. f. 35. 1842.
Ambystoma Jeffersoniana *Baird, Amer. Batr.* 283.

a. In spirits. Not good state. N. America. From the Leyden Museum.

4. AMBYSTOMA.

Head thick, convex. Skin smooth. Parotids indistinct, place marked by a few pores. Tongue ovate, moderate, attached, free on the side, rather contracted behind. Palatine teeth numerous, in a rather short cross series. Inner nostrils small, far apart. Sphenoid toothless.—*Toes* free.—*Tail* oblong, roundish.—*Sides* with cross folds.—*Skin*, in some species, with closely set glands secreting a milky fluid.—Eggs deposited in packets under damp stones. (*Baird.*)

Ambystoma *Tschudi, Batr.* 57. 1838; *Bonap. Faun. Ital.* ii. 131. n. 4.

Ambystoma α *Baird, Amer. Batr.* 281. 283. 1849.
Salamandroides *Fitz. S. R.* 33.
Salamandra sp. *Bonnat; Merrem, Tent.* 185.
Pseudotriton *Tschudi, Batr.* 93.
Plethodon (part.) *Tschudi, Batr.* 92.
Plethodon *Baird, J. A. N. S. Phil.* i. 282. 1849.
Saurophis *Fitz. S. R.* 33.
Salamandra, § 2. *Holbrook, N. A. Herp.* 67.
Triton sp. *Holbrook, N. A. Herp.* 79.

§ *Stout, black, pale spotted, or varied.*

1. Ambystoma Carolinæ.

Head moderate, muzzle slightly rounded. Body and tail above bluish black. Sides with a row of round or oval yellow spots; beneath purplish black.

Lacerta Carolinæ *Linn. S. N.* ed. 10.
Stellio (Spotted Eft) *Catesby, Carol.* t. 10.; *Penn. Act. Zool.* ii. 534.
Lacerta punctata *Linn. S. N.* i. 370.; *Gmelin, S. N.* 1076.; *Laur. Rept.* ii. 252.
Lac. maculata *Shaw, Zool.* iii. 304.
Le Pontué *Lacép. Quadr. ov.*
Salamandra punctata *Bonnat, Erp.* 63., *Ency. Méth.* t. 12. f. 1.; *Merrem, Tent.* 185.
Salamandra venenosa *Barton, Amer. Phil. Trans.* iv. t. 1.; *Daud. Rept.* viii. 229. 1803?; *Holbrook, N. A. Herp.* iii. 105. t. 24. ed. 2. v. 67. t. 22.
Lacerta subviolacea *Barton, Trans. Amer. Phil. Soc.* vi. 112. t. 4. f. 6.;
Salamandra subviolacea *Harlan, M. and P. Res.* 93., *N. A. Rept.* 11.; *Schlegel, F. Japon.* 118.
Salamandra Argus *Bell's MS. Mus. Zool. Soc.* n. 659.
Ambystoma subviolaceum *Tschudi, Batr.* 92.; *Bonap. F. Ital.* 131.
Ambystoma punctata *Baird, Amer. Batr.* 283.

a—e. In spirits. N. America, Pennsylvania.
f, g. In spirits. N. America. Presented by Thomas Bell, Esq.
h, i. In spirits. N. America. From Mus. Leyden.
j, k. In spirits. N. America. Old Collection.
l. Variety with small spots.

2. Ambystoma tigrinum.

"Head large. Muzzle rounded. Body elongated, bluish black, with irregular lemon-coloured spots. Tail longer than the body,

compressed, two-edged, coloured like body. Tongue broad, sub-round, entire, adherent posteriorly, less so in front, only loose and movable on the sides. Palatine teeth from outer margin of inner nostrils inwards and backwards. Sphenoid teeth in a larger transverse slightly arched group, rather in front of the end of the former."

Salamandra tigrina *Green, J. Acad. N. S. Phil.* v. 116.; *Harlan, N. A. Rept.* 12., *M. and P. Res.* 93.
Triton tigrina *Holbrook, N. A. Herp.* v. 79. t. 26.
Ambystoma tigrina *Baird*, l. c. 284.

Hab. New Jersey, Massachussets.

3. AMBYSTOMA ? TALPOIDEUM.

" Dusky, nearly black; beneath dusky, purplish. Head very large, flattened. Muzzle full, rounded. Mouth large. Tongue subrhomboidal, smaller and perfectly adherent behind, lateral and front edges free. Internal nostrils large. Palatine teeth minute, in a line, slightly arched backward in the middle, where the teeth are largest and more numerous. Sphenoid toothless. Eye small. Body short, thick, clumsy. Tail short, thick, compressed. Fore limbs short, thick, stout. Fingers four, short. Hinder limbs stouter. Toes five, slightly united at their base."

Salamandra talpoidea *Holbrook, N. A. Herp.* v. 73. t. 24.

Hab. South Carolina, on the sea islands. Terrestrial, burrowing under the ground like moles.

4. AMBYSTOMA OPACUM.

Head short, broad. Muzzle large, rounded. Body and tail pale ash, with irregular bluish-black cross bands. Throat and abdomen purplish blue. Tail as long as body, compressed.

Salamandra opaca *Gravenh. Ueber Zool. Syst.* 431. 1807, *Delic Mus. Urat.* i. 75. t. 10.
Salamandra Gravenhorstii *Leuckart* in *Fitz. N. Class. Rept.* 1825.
Salamandra fasciata *Green, Jour. Acad. N. S. Phil.* i. 350. 1818; *Harlan, N. A. Rept.* 13., *Med. and Ph. Rep.* 94.; *Holbrook, N. A. Herp.* v. 71. t. 23.; *Dekay, Rept. N. York*, 77. t. 17. f. 40.
Ambystoma opaca *Baird*, l. c. 280.
Ambystoma subviolacea (var ?) *Tschudi, Batr.* 92.

a, b. In spirits. N. America. Presented by Dr. Mac Murtrie.
c. In spirits. N. America. Presented by Thos. Bell, Esq.
d. In spirits. N. America.
e, f. In spirits. N. America. From the Leyden Museum.
g, h. In spirits. N. America.

5. AMBYSTOMA PUNCTULATUM.

Lead-coloured, smooth. Lower part of sides and beneath white. Cheek and upper part of sides with distant scattered white dots. Head depressed. Eyes large, prominent. Tail as long as the body, slender, rather tapering and compressed, rounded above and below.

a. In spirits. Monterey, California.

6. AMBYSTOMA MACRODACTYLUM.

Dark brown. Back with a broad (chestnut-brown) obscure stripe. Sides greyish-sprinkled; beneath dark brown, spotless. Toes long, not webbed. Tail roundish, not compressed. Skull longer than broad.

Ambystoma macrodactyla *Baird, J. A. N. S. Phil.* 1849, 292.

Hab. Oregon. Astoria. Mus. Acad. N. S. Philadelphia.

7. AMBYSTOMA MAVORTIUM.

Dull black or dark brown (in spirits), yellow-blotched above and below. Back with about 9, tail with 13, transverse yellowish bands. Body thick. Feet short; toes short, broad. Tail much compressed, longer than body and head. Skull broader than long.

Ambystoma mavortia *Baird, J. A. N. S. Philad.* 1849, 293.

Hab. New Mexico. (Dr. Weslizenus.)

8. AMBYSTOMA EPISCOPUS.

Yellowish, with dark mottlings and darker spots. Tail much compressed, shorter than the body. Skull longer than broad. Head wedge-shaped.

Ambystoma episcopus *Baird, J. A. N. S. Philad.* i. 292. 1849.

Hab. Mississippi, Kemper county. (C. Lloyd.)

§§ *Slender, brown.*—Saurophis *Fitz.*

9. AMBYSTOMA ERYTHRONOTUM.

Head short. Muzzle blunt. Body cylindrical, with a broad brown vertebral streak to end of tail; sides yellowish; abdomen white. Tail shorter than the body, tapering, pointed. Young reddish.

Salamandra erythronota *Green, Jour. A. N. S. Philad.* i. 356. 1818; *Harlan, M. and P. Res.* 95., *N. A. Rept.* 13.; *Holbrook, N. Amer. Herp.* v. 43. t. 11.
S. cinerea *Green*, l. c. 1. 356. 1818; *Harlan*, l. c. 95., *N. A. Rept.* 12.; *Schlegel, Faun. Japon.* 118.
Plethodon cinereus *Tschudi, Batrac.* 92.; *Baird, Batr. Amer.* 385.
Plethodon erythronota *Baird*, l. c. 285.
Saurophis erythronota *Fitz. S. R.* 33.

a—c. In spirits. N. America. Presented by Edward Doubleday, Esq.
d. In spirits. N. America.
e—g. In spirits. N. America. Presented by Thos. Bell, Esq.

10. AMBYSTOMA? HALDEMANI.

Head flattened above. Muzzle rounded. Body and tail above pale yellow, with three irregular series of dusky spots and blotches. Sides rather dusky. Tongue broad, subrotund. Pedicel short. Palatine teeth minute, in a line, running rather backwards, not united. Sphenoid teeth minute, in a longitudinal group in centre of palate.

Salamandra Haldemani *Holbrook, N. A. Herp.* v. 59. t. 18.

Hab. Pennsylvania, Maryland, Virginia.

11. AMBYSTOMA?? FRONTALE?

Dirty ferruginous, beneath yellowish. Nose white. Tail shorter than the body, thick, tapering, and pointed. Length three inches.

Salamandra sinciput alba *Green, Jour. Acad. Philad.* 352. 1818; *Harlan, N. A. Rept.* 13.
S. frontalis *Gray, Griffith, A. K.* ix. 107.

Hab. New Jersey. (Green.)

B. *Tongue broad, expanded, attached the whole of its length by a central line; the sides and hinder end free. Sphenoid toothed. Carpus and Tarsus not ossified.*—Plethodontina.

5. PLETHODON.

Head broad, depressed. Parotids none. Tongue large, broad, expanded, attached nearly the whole of its length by a linear cen-

tral band ; sides and hinder end free. Palatine teeth in two short series, generally interrupted in the middle, and sometimes rather directed backwards. Sphenoid covered with teeth in several series ; group wide behind.—*Skin* smooth. Sides plaited.—*Tail* rounded.

Plethodon *Tschudi, Batr.* 58. 92. ; *Bonap. Fauna Ital.* ii. 131. n. 6. ; *Fitz. S. R.* 32. ; *Baird*, l. c. 292.

Phatnomatorhina *Bibron, MS.* ♀, fide *Bonap.* l. c.

1. PLETHODON GLUTINOSUM.

Head large, semioval. Tail round, nearly twice as long as the body. Bluish black above. Back and tail minutely white-spotted ; sides with larger confluent white spots.

Salamandra glutinosa *Green, Jour. Acad. N. S. Philad.* i. 357. 1818, Sept. ; *Schlegel, Faun. Jap.* 118. ; *Harlan, N. A. Rept.* 14. ; *Holbrook, N. A. Herp.* v. 39. t. 10. ; *Dekay, Rept. N. York*, t. 17. f. 42. (very young.)

S. variolata *Gilliams, J. Acad. N. S. Philad.* i. 460. 1818, Decemb. ; *Harlan, N. A. Rept.* 18.

S. cylindracea *Harlan, Jour. Acad. N. S.* v. 156. 1825., *Med. and Phys. Res.* 94., *N. A. Rept.* 12.

" S. cylindrica *Harlan*," fide *Schlegel.*

Triton porphyriticus *Dekay, Rept. N. York*, 85. t. 16. f. 37.

Plethodon glutinosus *Tschudi, Batr.* 92. ; *Bonap. Fauna Ital.* ii. 131. ; *Fitz. S. R.* 32. ; *Baird, Batr. Amer.* 285.

OSTEOL. *Tschudi, Batr.* t. 2. f. 4. (skull.)

a—c. In spirits. Pennsylvania, N. America. Presented by Jacob Green, M.D.

d—g. In spirits. N. America. Presented by Edward Doubleday, Esq.

h. In spirits. N. America. From the Leyden Museum. Sal. cylindrica *Harlan.*

i. Young series, with very minute, white dots.

2. PLETHODON GRANULATUM.

Head large. Skin granulated. Body elongated, cylindrical. Tail round, slender, rather longer than the body and head. Greenish slate colour above, varied with grey and brown beneath.

Salamandra granulata *Dekay, Herp. N. York*, ii. t. . ; *Holbrook, N. A. Herp.* v. 63. t. 20.

Hab. New York. Var. *P. glutinosum ?*

C. *Tongue broad, expanded; front half attached by a central longitudinal line; hinder half broad, expanded, free, erectile, like those of frogs. Sphenoid toothed. Carpus and Tarsus not ossified.* — Desmognathina.

6. DESMOGNATHUS.

Toes 4 before, 5 behind. Gape narrow. Body subcylindrical. Sphenoidal teeth in two narrow patches attached to the edges of the sphenoidal bone. Occipital condyles very peculiar in consisting of short cylinders projecting from the exoccipitals with their axes parallel to that of cranium, and their extremities forming a spherically convex articulating surface. Crest of the first cervical vertebra transverse, with a strong ligament passing from each end across the posterior corner of the cranium to be inserted into the lower jaw. These ligaments prevent the opening of the jaw beyond a very slight amount. *Baird*, l. c. 282.

Desmognathus *Baird, J. Acad. N. S. Philad. U. S.* i. 282. 1849.
Triturus sp. *Rafin. Annals of Nat.* 1820.
Pseudotriton sp. *Tschudi, Batr.* 93.
Triton sp. *Holbrook, N. A. Herp.* 93.
Salamandra sp. *Green.*

1. Desmognathus niger.

"Black above. Sides with a few whitish spots. Abdomen purplish. Tail round at the base, compressed, two-edged at the tip. Tongue suboval, thin, broader behind, narrow and adherent in front, loose and most movable at its hinder edge. Palatine teeth in a transverse line. Sphenoid with a longitudinal series of teeth." *Holbrook.*

Salamandra nigra *Green, J. A. N. S. Philad.* 352. 1818; *Harlan, M. and Ph. Res.* i. 99., *N. A. Rept.* 16.; *Schlegel, Faun. Japon.* 119.
S. intermixta *Green, Maclurian Lyceum*, i. 5.; *Harlan, N. A. Rept.* 84.
S. picta *Harlan, M. and P. Res.* 98., *N. A. Rept.* 17.
Pseudotriton nigra *Tschudi, Batr.* 93.
Triton nigra *Holbrook, N. A. Herp.* v. 81. t. 27.
Desmognathus niger *Baird, Batr. Amer.* 286.

Hab. Atlantic States, from lat. 43° to Gulf of Mexico. Aquatic. *Mus. Acad. N. S. Phil.*

2. Desmognathus fuscus.

"Head rather large; muzzle roundish. Body elongate, stout. Dusky purplish above, with two series of elongated four-sided

red spots. Tail with a red mesial line, compressed at the sides, tapering, acute. Tongue round, shortly pediceled. Palatine teeth very minute, in a line behind the nostrils, united in middle. Sphenoid teeth (half a line behind) in two longitudinal subparallel groups, rather wider behind." *Holbrook.*

Salamandra quadrimaculata *Holbrook, N. A. Herp.* v. 49.
S. quadramaculata *Holbrook, N. A. Herp.* v. t. 13.
Triturus fuscus *Raf. Annals of Nat.* 1820.
Sal. intermixta *Green, Hall's Portfolio,* xx. 259.; *Macl. Lyc.* i. 827.
S. picta *Harlan, J. Acad. N. S.* v. 138. 1828.
Desmognathus fuscus *Baird,* l. c. 285.

Hab. Georgia, Carolina, Pennsylvania.

3. DESMOGNATHUS AURICULATUS.

Head small. Body and tail cylindrical, dusky brown, with a reddish brown spot near the ear; sides with a series of minute reddish dots.

Salamandra auriculata *Holbrook, N. Amer. Herp.* v. 47. t. 11.
Plethodon? auriculatus *Rüppell, Verz. Mus. Senk.* 24.
Desmognathus articulatus *Baird,* l. c. 286, 1849.

a—d. In spirits. New Orleans. Presented by Edward Doubleday, Esq.

7. HEMIDACTYLIUM.

Head small, rounded, truncated.—*Body* short, round.—*Tail* fusiform, compressed. Body and tail plaited on the sides.—*Skin* smooth.—Sphenoid *teeth* in many series.—*Tongue* very long, acute in front, broad behind; front half adherent by a central linear band, sides and under part free.—*Feet* slender.—*Toes* 4 : 4; short, webbed at the base. Costal furrows deep, extending to dorsal line

Hemidactylium *Tschudi, Batr.* 59. 94. 1838.; *Bonap. Fauna Ital.* ii. 131. n. 10.; *Fitz. S. R.* 33.; *Baird,* l. c. 284. 1849

1. HEMIDACTYLIUM SCUTATUM.

Pale brown, beneath yellowish, black-spotted.

Hemidactylium scutatum *Tschudi, Batr.* 94.; *Bonap. Fauna Ital,* ii. 131.
Salamandra scutata *Schlegel, Mus. Leyd. Abbild.* t. 40. f. 4. 6., *Fauna Japonica,* ii. 119.

Salamandra melanosticta *Gibbes, Boston Jour. N. H.* v. 89. t. 10.

a. In spirits. N. America, Niagara. Back with three indistinct series of black specks. Sides dark, clouded.

D. *Tongue peltate; top subcircular, dilated; free all round, only attached by a central subcylindrical pedicel, which is surrounded by a sheath.* "*Tongue entirely protractyle, capable of considerable protrusion, and supported on the top of the constricted hyoid apparatus. Sphenoidal teeth on two plates, not in contact, diverging behind.*" Baird.—Œdipina.

8. BATRACHOSEPS.

Head very short. Eyes prominent.—*Skin* smooth.—*Body* and *tail* elongate, slender, roundish, plaited on the sides.—*Limbs* slender, far apart.—*Toes* 4 : 4, short, slender, free.—*Tongue* peltate.—Palatine *teeth* very small, in a small transverse arched series.

Batrachoseps *Bonap. Fauna Ital.* ii. 131. n. 9. 1841; *Fitz. S. Rept.* 33.; *Baird, Jour. Acad. N. S. P.* 1849, 283. 287.
Salamandrina *Eschsch. Zool. Atlas*, 21. (not Savi.)

1. Batrachoseps attenuatus.

Blackish brown. Back and upper part redder, with a black dorsal line and diagonal cross lines. Body and tail elongate, slender, round. Feet very small, thin. Toes 4 : 4, subequal, free.

Salamandrina attenuata *Esch. Zool. Atlas*, t. 21. f. 1—14.
Batrachoseps attenuatus *Bonap. Fauna Ital.* ii. 131. 1841; *Fitz. S. R.* 33.
B. attenuata *Baird*, l. c. 288.

Osteol. *Esch. Zool. Atlas*, t. 21. f. 5, 6.

a—*c*. In spirits. Young and adult. St. Francisco, California.

2. Batrachoseps quadridigitatus.

Pale straw colour, beneath bluish and silvery, vertebral and lateral line brown dotted. Body long, slender. Tail very long.

Salamandra quadridigitata *Holbrook, N. Amer. Herp.* v. 65. t. 21.
Batr. quadridigitata *Baird, J. A. N. S. Phil.* 1849, 287.

Hab. Georgia, Florida, S. Carolina.

9. SPELERPES.

Head moderate. Eyes moderate, pupil oblong, horizontal. Parotids none. Tongue large, peltate, free all round, on a cylindrical central pedicel. Palatine teeth in a transverse series, between the internal nostrils. Sphenoidal teeth in two or more longitudinal series. — *Body* subcylindrical, plaited on the sides. — *Toes* 4 : 5, free. — *Tail* subcylindrical, tapering, keeled above and rounder beneath.

Spelerpes *Rafin. Atlant. Jour.* i. 22. 1832; *Baird, Jour. A. N. S. Phil.* 1849, 287.
Pseudotriton *Tschudi, Batrac.* 60. 94. 1838; *Baird, Jour. A. N. S. Phil.* 1849, 286.
Batrachopsis *Fitz. Syst. Rept.* 34. 18.
Cylindrosoma *Tschudi, Batrac.* 60. 94. 1838; *Bonap. Fauna Ital.* ii. 131. n. 7.
Mycetoglossus *Bibron, MS.*, fide *Bonap. Fauna Ital.* ii. 131.
Molge sp. *Merrem, Tent.* 185.
Plethodon saurocercus *Fitz. S. R.* 34.
Triton sp. *Troost.*
Salamandra sp. *Green, Holbrook, Storer.*

Larva :
Siren sp. *Pal. de Beauv. Amer. Phil. Trans.* iv. 279. 1796.
Proteus sp. *Green, Jour. A. N. S. Phil.* i. 358. 1818.

§ *Tail elongate, compressed, rounder beneath.* — Spelerpes.

1. Spelerpes longicauda.

Nose moderate, depressed. Eyes large. Body elongate, lemon-coloured above, marked with small, irregular, oblong or round, black spots. Tail more than twice as long as the body, compressed, with black cross bands.

Salamandra longicauda *Green, Jour. A. N. S. Philad.* i. 351. 1818; *Harlan, N. A. Rept.* 15., *M. and Ph. Res.* 16.; *Holbrook, N. A. Herp.* v. 61. t. 19.; *Schlegel, Faun. Japon.* 118.; *Dekay, Rept. N. Y.* 78. t. 17. f. 41.
Spelerpes lucifuga *Raf. Atlant. Jour.* i. 22. 1832.
Spel. longicauda *Baird*, l. c. 287.
Cylindrosoma longicauda *Tschudi, Batr.* 93.; *Bonap. Fauna Ital.* ii. 131.
Plethodon (Saurocercus) longicauda *Fitz. S. R.* 34.

a. In spirits. Half-grown : middle of back and upper part of

tail nearly spotless. N. America. Presented by Jacob Green, M.D.

Salamandra longicauda *Holbrook, N. A. Herp.* t. 19.

b. In spirits. Adult; back, sides, and upper part of tail with large black irregular spots; upper lips with two cirri. N. America.

c, d. In spirits. Half-grown; like *b*, but with an indistinct spotless band on each side of the back. N. America. Presented by Edward Doubleday, Esq.

e. In spirits. Yellow; back with four irregular series of black spots, spots of the vertebral series smaller and closer together. N. America, Ohio. From Leyden Museum.

f. In spirits. Half-grown; back and upper part of tail slightly spotted; spots on side and sides of tail crowded, subconfluent. N. America, Ohio. From Leyden Museum.

g, h. Young (var.?). Belly black-spotted. N. America.

2. SPELERPES CIRRIGERA.

"Head short; muzzle rounded. Upper jaw 2-bearded between nostrils and lips. Body above pale yellow, mottled with black dots, with a dusky lateral line. Tail compressed; longer than the body. Tongue elongated, oval, thin, very mobile. Palatine teeth transverse, from inner edge of internal nares. Sphenoid teeth very minute, in a broad longitudinal streak to hinder end of palate."

Salamandra cirrigera *Green, J. Acad. N. S. Philad.* iv. 251. 1831; *Harlan, M. and P. Res.* 97.; *Holbrook, N. A. Herp.* v. 53. t. 15.
Spelerpes cirrigera *Baird, Jour. A. N. S. Phil.* 1849, 287.

Hab. Louisiana and Mississippi. Probably only a variety of the preceding, which often has two beards on the upper lip.

3. SPELERPES BILINEATA.

"Head small. Body cylindrical. Tail longer than the body, tip slightly compressed. Above brownish yellow, sides with a black line, belly yellow. Tongue small, suboval, thin, pediceled, very movable. Palatine teeth in a cross line from inner edge of nostrils. Sphenoid teeth in two longitudinal lines to back of palate."

Salamandra bilineata *Green, Jour. Acad. N. S. Phil.* i. 325. 1818; *Harlan, N. A. Rept.* 16.
S. bilineata *Holbrook, N. A. Herp.* v. 55. t. 16.
S. flavissima *Harlan, Silliman's Amer. Jour. Sci.* 1825., *N. A. Rept.* 17., *M. and P. Res.* 97.

Mycetoglossus bilineata *Bonap. Faun. Ital.* ii. 131.
Spelerpes bilineata *Baird*, l. c. 287. 1849.

Hab. Massachussets, N. and S. Carolina.

4. SPELERPES GUTTOLINEATA.

Nose short. Eyes large. Body pale straw-coloured above, with black vertebral line bifurcating behind the occiput; a black lateral band enclosing a row of white spots, and edged with white, beneath. Tail nearly twice as long as body and head.

Salamandra guttolineata *Holbrook, Amer. Herp.* v. 29. t. 7.
Spelerpes guttolineata *Baird*, l. c. 1849, 287.

a. In spirits. N. America.

§§ *Tail not longer than the body, conical, keeled above. Skull as long as broad.* — Pseudotriton *Tschudi.*

5. SPELERPES RUBRA.

Nose rounded. Eyes small. Red above, darker-clouded, with numerous black dots. Sides red, spotless, and abdomen red, black-dotted. Tail about as long as the body, keeled above at the end.

Salamandra rubra *Latr. Rept.* iv. 305.; *Daud. Rept.* viii. 297. t. 92. f. 2. 1803; *Harlan, N. A. Rept.* 16.; *Holbrook, N. A. Herp.* v. 35. t. 9.; *Dekay, Rept. N. Y.* Oct. 17. f. 43.
Molge rubra *Merrem, Tent.* 183.
S. rubriventris *Green, J. Acad. N. S. Philad.* i. 383. 1818, adult living; *Harlan, Med. and Phys. Res.* 97.
S. maculata *Green, Jour. Acad. N. S. Philad.* i. 350. 1818, bleached; *Harlan, M. and P. Res.* 97., *N. A. Rept.* 15.
Pseudotriton maculata *Tschudi, Batr.* 95.
S. subfusca *Green, Jour. A. N. S. Phil.* i. 357. 1818, adult in spirits; *Harlan, N. Amer. Rept.* 15.; *Schlegel, Faun. Japon.* 119.
S. fusca *Green, Jour. Acad. N. S. Phil.* i. 357.; *Harlan, M. and P. Res.* 97., *N. A. Rept.* 14.
Triton subfuscus *Troost.*
Pseudotriton subfuscus *Tschudi, Batr.* 95.; *Fitz. S. R.* 34.
Mycetoglossus subfuscus *Bonap. Fauna Ital.* ii. 131.
Mycet. ruber *Bibron.*

LARVA:

Siren operculata *Pal. de Beauv. Amer. Phil. Trans.* iv. 279. t. f. 3. 1796.
Proteus neocæsarcanus *Green, Jour. A. N. Phil.* i. 358. 1818.

a—i. In spirits. Different ages. N. America. Presente by Jacob Green, M.D.
S. maculata *Green.*
j. In spirits. N. America. Presented by Prof. Vernuxen.

6. SPELERPES MONTANA.

Reddish brown, with scattered well-defined black or dark brown circular spots; beneath deep salmon colour. Tail as long as the body. Toes dark, without the longitudinal bar. Costal grooves 17.

Pseudotriton montanus *Baird, Jour. A. N. S. Philad.* 1849, 287.

Hab. N. America, Pennsylvania. (Baird.)

7. SPELERPES? SALMONEA.

"Body and tail yellowish brown above; yellowish salmon-coloured on the sides, and with a salmon-coloured line on each side from orbit to nose. Tail rather longer than the body, compressed at the end."

Salamandra salmonea *Storer, MS.; Holbrook, N. A. Herp.* ed. 1. iii. t. 22. 1838, ed. 2. v. 33. t. 8.; *Dekay, Rept. N. Y.* 76. t. 16. f. 39.
Pseudotriton salmoneus *Baird,* l. c. 287.

Hab. N. America, Vermont.

Probably S. porphyritica *Green, Cont. Macl. Lyc.* i. t. 1. f. 2.

8. SPELERPES? PORPHYRITICA.

"Head moderate. Muzzle blunt. Body elongated. Tail as long as body, compressed, and slightly keeled on the upper and hinder half of lower edge. Above dark brown, with irregular white spots. Tongue broad, elongated, thin, attached posteriorly, less so anteriorly, and most movable on the sides. Palatine teeth in a continued transverse line. Sphenoid toothless. Nostrils lateral, superior, with a slight ridge from them to the orbit."

Salamandra porphyritica *Green, Maclurian Lyceum,* i. 3. t. i. f. 2.; *Harlan, Med. and Ph. Rep.* 98.
Triton porphyriticus *Holbrook, N. Amer. Herp.* v. 83. t. 28.

Hab. Pennsylvania, French Creek. (Green.)

9. SPELERPES BELLII.

Blackish back, with two series of oblong yellow spots, front ones confluent. Nape with a broad triangular yellow mark, with a

large oblong yellow spot on each side. Toes short. Palatine teeth ———.

a. In spirits. Tail reproduced, ? brown, tapering, rounded above and below. Mexico. Presented by T. Bell, Esq.

10. GEOTRITON.

Head rounded. Muzzle high, truncated. Eyes large, prominent. Parotids none. Tongue large, circular, peltate, only affixed in the middle, very mobile. Teeth very minute; palatine placed in four series, two anterior and two posterior.—*Body* rounded. Sides plaited. Skin smooth, thin, soft. Ribs none.—*Limbs* slender, thin, long.—*Toes* 4 : 5, short, thick, all united by a web.—Soles of *feet* without warts.—*Tail* roundish, attenuated.

Geotriton *Bonap. Faun. Ital.* t. 31. n. 14., *Amph. Eur.* 67.; *Tschudi, Batr.* 59. 93. 1838; *Fitz. S. R.* 33.
Salamandra sp. *Gesner, Schlegel, Cuvier.*

1. GEOTRITON FUSCUS.

Brown, with obscure reddish marks, beneath ash with very minute white dots. Muzzle obliquely truncated below. Nostrils lateral. Eyes prominent. Tail rather shorter than the body.

Salamandra fusca *Gesner, Quad. ov.; Aldrov., Laur. Rept.* 4
Lacerta Salamandra γ. *Gmelin, S. N.* 1. 1067.
Salamandra Savii *Gosse, Cuvier, R. A.*
Salamandra Genei *Schlegel.*
Geotriton Genei *Tschudi, Batr.* 94. t. 5. f. 3., *Mém. Soc. Neuch.*
G. Savi *Bonap. Faun. Ital.* t.
Geot. fusca *Bonap. Amph. Eur.* 66.
S. atra (part.) *Merrem, Tent.* 184.
? S. funebris *Bory, D. Class. Hist. Nat.*

Hab. Italy. Mus. Bonaparte, Rome.

11. ŒDIPUS.

Head flat, broad. Muzzle truncated. Eyes prominent. Neck long, slender. Palatine teeth many, extending to the inner hinder angle of the inner nostrils. Tongue small, ovate, only affixed in the middle.—*Feet* small. Toes ——? indistinct; very small, broad, rounded, webbed.—*Skin* very smooth, minutely punctated; lateral line none.—*Tail* subcylindric, elongate.

" Sphenoidal teeth on two plates, not in contact, diverging behind. Toes dilated at the top into sucker-like disks, as in *Hyla*." *Baird*, l. c. 282.

Œdipus *Tschudi*, *Batr.* 58. 93. 1838; *Bonap. Fauna Ital.* ii. 131. n. 8.; *Fitz. S. R.* 34. (not Lesson, 1840.)

Salamandra sp. *Cuvier*, *R. A.*

1. Œdipus variegatus.

Yellow brown, with three irregular slightly inosculatory dorsal streaks.

Salamandra platydactyla *Cuv. Mus. Paris.*

Œdipus platydactylus *Tschudi*, *Batr.* 93. 1834; *Fitz. S. R.* 34.; *Bonap. Fauna Ital.* ii. 131.; *Baird*, l. c. 286.

Salam. variegata *Gray*, *Griffith*, *A. K.* ix. 107.

a. In spirits. Tail reproduced, short, conical, thick. Mexico.

b. In spirits. Tail perfect, tapering, longer than body and head. Mexico.

E. *Tongue broad, peltate, attached by a round central pedicel, and by a small frenum on the front edge.*—Ensatinina.

12. ENSATINA.

Head depressed. Nose short. Eyes large, prominent. Parotids none. — *Skin* smooth. Sides folded across. — *Toes* 4 : 5, elongate, free, slender. — *Tail* subcylindric, rounded beneath, attenuated. — *Tongue* very large, round, expanded, attached by a round central pedicel, and a slight round belt on the front margin. — Palatine *teeth* in two regular transverse arched series, partly behind the inner nostrils. Sphenoid toothless.

1. Ensatina Eschscholtzii.

Smooth, ferruginous. Back marbled. Tail pointed, nearly as long as the body; beneath thick, above rather compressed.

Triton ensatus *Eschscholtz*, *Zool. Atlas*, 6. t. 22. f. 1—12.

a, *b*, *c*. In spirits. California. Half-grown and young.

Animals apparently of this Suborder, which have only been observed in their Larva state.

1. Axolotl *Cuvier, R. A.* ii. 119.; *Humb. Obs. Zool. Oss. Fos.* v. 1811; *Mayer, Anal.* 87.; *Home, Phil. Trans.* 1824.
Gyrinus *Hernand. N. S.* 77.; *Shaw, Nat. Misc.* iii. 313. (not Linn.)
Siredon *Wagler, Icon.* t. 20. *Syst.*; *Tschudi, Batrac.* 97.; *Fitz. S. R.* 34.
Phyllhydrus *Brook, Cat. Mus.*; *Gray* in *Griffith's A. K.* ix. 108.
Triton Larva? *Gray, Ann. Phil.* 1825. 215.
Molge Larva *Merrem, Tent.* 187.
Piscibus ludicus seu Axolotl *Hernand. Hisp.* 76.
Gyrinus edulis seu Atolocatl *Hernand. Anim. N. Hispan.* 77.
Phyllhydrus pisciformis *Gray, Griff. A. K.* ix. 108.
Siredon Axolotl *Wagler, Icon. Amph.* t. 20. 1833; *Tschudi, Batr.* 9.; *Fitz. S. R.* 34.
Proteus seu Larva Salamandræ, Mexicanis Axolotl, *Cuv. Humb. Zool.* i. 109. t. 12. 14. f. 10. 16.
Axolotl *Home, Phil. Trans.* 1824, 519. t. 21. 23.; *Cuvier, Oss. Fos.* v. t. 27. f. 24, 25., *R. A.* ii. 119.
Siren pisciformis *Shaw, Zool.* iii. t. 140. f. 12. 1802.
Gyrinus mexicanus *Shaw, Nat. Misc.* t. 313. 1800.
Molge giganteus junior *Merrem, Tent.* 187.
Axolotus mexicanus *Cuvier; Bibron, Mus. Zool. Soc.* n. 674.
Axolotes guttatus *Owen, Ann. and Mag. N. H.* xiv. 23.
Hypocthon pisciformis *Gravenh. Del. Mus. Urat.* 84. 1829.
Siredon mexicanus *Baird*, l. c. 292. 1849.

Anat. *Cuvier* in *Humboldt's Obs. Zool.* t. 12.; *Home, Phil. Trans.* 1824; *Cuvier, Oss. Fos.* v. 418. t. 27. f. 24. 25.

Osteol. *Cuvier* in *Humboldt, Obs. Zool.* t. 14. f. 10—16. (skeleton).

a—c. In spirits. Mexico. Mr. Brandt's collection.

The skull, t. 3. f. 12., copied from *Cuvier, Oss. Foss.* t. 27. f. 25., differs very little from that of the young *Triton marmoratus*, which had not gained its second pair of legs, figured t. 2. f. 10. from *Dugès*, t. 14. f. 89.

"It (*Siredon*) so much resembles the larva of *Ambystoma punctata*, in both external form and internal structure, that I cannot but believe it to be the *larva* of some gigantic species of this genus. It differs from all known *Perennibranchiates* in possessing the larval character of the gular or opercular flap, this being unattached to the subjacent integuments, and free to the extremity of the chin. The nondiscovery of the adult is no argument against

its existence. I had caught hundreds of the very remarkable larva of *Pseudotriton salmoneus* near Carlisle, before I found an adult. Until then I knew no where to refer the animal, supposing this species to exist no nearer than the mountains of New York and Vermont." — *Baird, Jour. A. N. S. Phil.* 1849, 292.

2. AXOLOTES MACULATA *Owen, Ann. and Mag. N. H.* xiv. 23. 1844.
Siredon maculatus *Baird*, l. c. 292.
"Axolotes marmoratus" *Owen MS. Brit. Mus.*

a, b. In spirits. Pale brown, minutely punctated. Partly dissected. Mexico. Presented by R. Owen. Esq.

Doubtful Species of B. Gradientia.

1. Cylindrosoma albipunctatum *Rüppell, Verz. Mus. Senk.* 24., not described. N. America.
2. Xiphosura flavomaculata *Rüppell, Verz. Mus. Senk.* 24., not described. N. America.
3. Salamandra agilis *Sager, Silliman's Jour. Sci.* xxxvi. 1839, 322
4. S. lurida *Rafin. Atlant. Jour.* 3. 121. 1832.
5. S. punctatissima *W. Wood, Jour. Acad. N. S. Phil.* 1825, 306.
6. Triton tereticauda *Eschsch. Zool. Atlas*, iii. 14. Smooth, ferruginous red; belly white, dotted. Tail acuminated, roundish. Length six inches. California.
7. Salamandre mortuaire *Bosc, N. Dict. Hist. Nat.* xxi. 60. xxxi. t. 8. f. 6. Toes 4 : $\overline{5}$; inner toes very small. Black, varied with grey; belly pale brown. Tail cylindrical, longer than the body.
8. Salamandra granulata *Dekay, Rept. N. Y.* 78. t. 23. f. 66. 1842
9. Salamandra coccinea *Dekay, Rept. N. Y.* 81. t. 21. f. 54. 1842 =? N. miniata *Rafin.*
10. Sal. ocellatus *Fitz. N. Class. Rept.* 1825.
11. Sal. similis *Fitz. N. Class. Rept.* 1825.
12. Triturus hypoxanthus *Rafin. Annals of Nat.* n. 20. 1820.
13. T. nebulosus *Rafin. Annals of Nat.* n. 23. 1820.
14. T. lutescens *Rafin. Atlantic Jour.* n. 3. 121. 1832.

Order II. PSEUDOSAURIA.

Body elongate, lizard-like, with a tail.
Legs four, rudimentary.
Gills rudimentary, internal. Gill apertures permanent throughout life.
Internal nostrils on the sides of the palate, surrounded by the bone of the palate.

Amphiumidæ *Gray*, *Ann. Phil.* 1825, 216.
Imperfectibranchia *Hogg*, *Ann. N. H.* 1839.
Ichthyodi hedræoglossi *Wagler*, *Syst.* 1830.
Amph. abranchia *Bell* in *Todd's*, *Cyclop. Med.* 1835 (not Hogg).
A. urophora (part.) *Hogg*, *Ann. N. H.* 1839.
B. tetrapoda (part.) *Hogg*, *Ann. N. H.* 1839.
B. lacertiniformia (part.) *Hogg*, l. c.
Diplopneumena mancabranchia *Hogg*, l. c.
Menopomatidæ *Hogg*, *Ann. N. H.* 1839.
Monopneumena imperfectibranchia *Hogg*, l. c. 1839.
Monopneumena caducibranchia arcumanentia *Hogg*, 1839.
A. diplopneumena imperfectibranchia *Hogg*, *Ann. and Mag. N. H.* 1841, 362.
Proteideæ *Tschudi*, *Batr.* 1838, 26.
Derotremata *Müller*, *Isis*, 1831, 710., *Ann. and Mag. N. H.* 1841, 355.
Cryptobranchoideæ (part.) *Fitz. Class.* 66.; *Holbrook*, *N. A. Herp.* 87.
Cryptobranchoidei *Eichw. Zool. Spec.* ii. 164.
Ichthyodi (part.) *Bonap. Amph. Eur.* ii. 1839.
Ichthyodea *Fitz. S. R.* 34.
Hemisalamandræ et Derotremata *Fitz. S. Rept.* 34.
Salamandra andriadinæ *Bonap. Fauna Ital.*, *Amph. Eur.* 11.
B. U. Trematodera (part.) *Dum. & Bib.*
B. U. Trematodera *a. Baird*, *Jour. A. N. S. Phil.* 1849, 289.
Abranchia (part.) *Swainson*, *Cab. Cyclop.* ii. 342.

Synopsis of Families.

I. *Protonopsidæ*. Legs strong. Palatine teeth in a transverse arched series.

II. *Amphiumidæ*. Legs weak. Palatine teeth in two longitudinal diverging series.

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Fam. I. PROTONOPSIDÆ.

Body depressed, fringed on the sides.
Legs four, well developed, fringed on the sides.
Toes 4 : 5.
Head depressed. Bones of skull soldered together.
Jaws with a single series of teeth.
Palate with an arched series of teeth on the front edge of the vomer, near to and parallel with the intermaxillary and maxillary teeth. See t. 3. f. 18.

Amphiumidæ (part.) *Gray, Ann. Phil.* 1825 ; *Bonap. Desc. Anim. Vert.* 26. 1832.
Andriadina et Protonopsidina *Bonap. Fauna Ital.* ii. 131., *Amph. Eur.*

Synopsis of Genera.

1. Sieboldia. Tail depressed at the base, compressed at the end. Toes free.
2. Protonopsis. Tail compressed. Toes webbed.

1. SIEBOLDIA.

Head large, ovate, trigonate, densely glandular. Muzzle produced. Crown convex. Forehead concave. Nostrils marginal, approximate. Eyes very small, scarcely to be seen. Parotids none. Tongue not distinct; united to the tegument of the base of the mouth. Palatine teeth numerous. — *Feet* with a crustaceous appendage behind. Toes 4 : 5, small, free, depressed, with a depressed lateral cutaneous lobe. — *Tail* depressed, roundish at the base.—*Body* depressed, with transverse plaits and a thick cutaneous appendage along each side.

Megalobatrachus *Tschudi, Batrac.* 61. 96. 1838 ; *Fitz. S. R.* 34.
Sieboldia *Bonap. Proc. Zool. Soc.* 1837, *Fauna Ital.* ii. 131. n. 2.
Cryptobranchus sp. *Van der Hoeven. P. Z. S.* 1838, 25., *Tijdsch.* 1.
Salamandra sp. *Schlegel.*
Hydrosalamandra *Leuckart, Froriep. Not.* xiii. 19.

1. Sieboldia maxima.

Megalobatrachus Sieboldii *Tschudi, Batr.* 96.; *Fitz. S. R.* 33.
Salamandra maxima *Schlegel, Fauna Japon.* vii. t. 6, 7, 8.
Sieboldia maxima *C. Bonap. MS.* 1837, *Proc. Zool. Soc.* 183- *Fauna Ital.* ii. 131.

Cryptobranchus japonicus *Van der Hoeven, Proc. Z. Soc.* 1838, 25., *Tijdsch.* i. t. 1. f. 56., *Fauna Japon.* t.
Hydrosalamandra japonica *Leuckart, Froriep. Not.* xiii. 19.

a. Skin stuffed. Japan. From Leyden Museum.
b. Skeleton of *a.* Japan. From Leyden Museum.

2. PROTONOPSIS.

Head large, ovate, trigonate, flat. Muzzle produced. Mouth large. Jaws with a series of minute teeth. Palatine teeth small, concentric with the maxillary on front edge of the vomerine bones. Nostrils marginal, close together, square. Tongue very indistinct.—*Neck* with a single slit on each side.—*Body* depressed, granose.—*Tail* compressed.—*Feet* short, outer edge fringed. Toes 4 : 5, short, webbed, clawless; outer toe of the hind foot fringed.—The palatine teeth have been taken for a second series of maxillary. t. 4. f. 18.

Protonopsis (part.) *Barton on Siren lacertina*, 28.
Salamandrops *Wagler, Syst.; Fitz. S. R.* 34.
Cryptobranchus sp. *Leuck. Isis*, 1821, 257., *Mém. Soc. Strasb.* iii.; *Fitz. N. Class.* 66. 1826; *Eichw. Zool. Spec.* iii. 164.; *Van der Hoeven, Tijdsch.*
Menopoma *Harlan, Ann. Lyc. N. Y.* i. 270. 1825; *Tschudi, Batr.* 96.; *Cuvier, R. A.* ii. 116.; *Baird*, l. c. 1849, 290.; *Owen, P. Z. S.* 1838, 25.
Abranchus *Harlan, Ann. Lyc. N. Y.* i. 221, 1825; *Gray, Griffith's A. K.* ix. 109.
Eurycea *Rafin. Atlant. Jour.* 1832.

1. Protonopsis horrida. Hellbender.

Pale cinereous, with darker blotches. Head very large, broad.

Protonopsis horrida *Barton.*
Abranchus horridus *Gray, Griffith's A. K.* ix. 109.
Salamandra horrida *Barton.*
Salamandra gigantea *Barton on Siren lacertina*, 28.; *Cuvier, R. A.* ii. 101. ed. 2. ii. 118.
Molge gigantea *Merrem, Tent.* 187.
Menopoma gigantea *Tschudi, Batr.* 96.
Salamandrops gigantea *Wagler, Syst.; Fitz. S. R.* 34.
Salamandra alleghaniensis *Michaux; Daud. Rept.* viii. 231, 1803; *Latr. Rept.* ii. 253. fig. ; *Cuv. Oss. Foss.* v. 2.
Menopoma alleghaniensis *Harlan, Ann. N. Y. Lyc.* i. 270. 1825, *J. A. N. P.* 320.; *Wied. Voy. Amer. N.* iii. 313.; *Dekay, Rept. N. Y.* 89. t. 18. f. 44.; *Baird*, l. c. 290.
Abranchus alleghaniensis *Harlan, Ann. N. Y. Lyc.* i. 221. 1825; *Leconte, Ann. L. N. York*, i. t. 17.

Triton alleghaniensis *Daud. Rept.* viii. 231.
Leverian Water Newt *Shaw, Zool.* 44. 303. 1802.
Proteus of the Lakes (young) *Say, Jour. A. S. Phil.* i.
Cryptobranchus alleghaniensis *Van der Hoeven, Tijdsch.* i. t. f. 4. 7. 1838.
Cryptobranchus salamandroides *Leuck. Isis*, 1821, 257.; *Fitz. N. C.* 66. 1826.
Eurycea mucronata *Rafin. Atlant. Jour.* No. 3. 121. 1832.
Alligator *at Pittsburg.*

Osteol. t. 4. f. 18. *Cuvier, Oss. Fos.* v. 409. t. 26. f. 3, 4, 5, 6. (skull).; *Van der Hoeven*, l. c. t. 1. f. 4.

a. In spirits. Young, not good state. N. America. From the Leyden Museum.
b. In spirits. Adult. N. America.

2. Protonopsis fusca.

Head large, flat. Muzzle full and rounded. Body uniform, pale brown, beneath paler.

Menopoma fusca *Holbrook, H. Amer. Herp.* v. 99. t. 33.; *Baird*, l. c. 290.

Hab. N. Carolina and Georgia. Probably only a variety of the former.

Fam. II. AMPHIUMIDÆ.

Head oblong, nearly four-sided. Muzzle truncated. Lips thick, external. Gape small. Jaws with a series of small golden-coloured teeth. Palate with two subcentral, longitudinal, rather diverging series of teeth, nearly parallel to the maxillary teeth. (See t. 4. f. 21., from *Owen, Odont.* t. 62. f. 7.) Tongue indistinct. Internal nostrils surrounded by bone on the sides of the palate.
Neck with a foramen on each side.
Body eel-shaped.
Feet four, short, slender, jointless, of little use for walking.
Toes rudimentary.
Ribs very rudimentary.

Living in water, burrowing in the mud in swamps near streams. Hybernates.

Amphiumidæ (part.) *Gray, Ann. Phil.* 1825; *Bonap. Distrib. Anim. Avert.* 27., *Amph. Eur.*
Amphiuminina *Bonap. Amph. Eur.* 62.
Amphiuma *Cuvier, R. A.* ii. 118.
Abranchia (part.) *Swains. Cab. Cyclop.* i. 342. 1839.

Synopsis of Genera.

1. AMPHIUMA. Toes 2 : 2.
2. MURÆNOPSIS. Toes 3 : 3.

1. AMPHIUMA.

Toes 2 : 2.

Amphiuma *Linn.*; *Garden, Correspond. with Linn.* 1821; *Cuvier, Oss. Fos.* v. 420., *Mém. Mus. H. N.* xiv. 4.; *Wagler, Icon.* 6.; *Tschudi, Batr.* 97.; *Baird*, l. c. 1849, 290.
Chrysodonta *Mitchill, Med. Recorder*, 1822.
Sirenoides *Fitz. S. R.* 34.

1. AMPHIUMA MEANS. Congo Snake.

Dark brown.

Amphiuma means *Linn.*; *Garden* in *Smith's Correspondence of Linnæus*, 333. 599. 532.; *Holbrook, N. A. Herp.* t. 30.; *Harlan, Jour. N. S. Phil.* iii., *Annal. Lyc. N. Y.* 126. t. 22.
Amph. didactylum *Cuv. Mém. Mus.* xiv. 4. t. f. 1, 2, 3. 1828; *Wagler, Icon.* t. 19. f. 1., *Bull. Sci. Nat.* 163.
Chrysodonta larvæformis *Mitchill, Medical Recorder*, 1822, No. 19.; *Harlan, Jour. Acad. N. S. Phil.* iii. 54.
Siren similis *Linn.*; *Smith, Corresp.* i. 599.
Sirenoides didactylum *Fitz. S. R.* 34.

ANAT. *Harlan. J. A. N. S.* iii. 55.

a. In spirits. Adult. N. America.
b, c. In spirits. N. America. Presented by T. Bell, Esq.

2. MURÆNOPSIS.

Toes 3 : 3.

Murænopsis *Fitz. S. R.* 34.
Amphiuma sp. *Cuvier, R. A.* ii. 118.
?Siren (adult) *Rusconi.*

1. MURÆNOPSIS TRIDACTYLA.

Amphiuma tridactyla *Cuv. Mém. Mus.* xiv. t. 1.; *Holbrook, N. A. Herp.* t. 31.; *Baird*, l. c. 1849, 290.
Murænopsis tridactyla *Fitz. S. R.* 34.
?Four-footed Siren, Siren quadrupeda *Barton on Siren lacertina.*
Siren lacertina (adult) *Rusconi, Amour. Salam.* p. 11.

OSTEOL. t. 4. f. 21. *Owen, Odont.* t. 62. f. 7.

a. In spirits. Florida, N. America. Presented by R. Harlan, M. D.

Order III. PSEUDOPHIDIA.

Body elongate, subcylindrical. Limbs none.
Skin smooth, wrinkled, with minute embedded scales.
Tail extremely short.
Vent open at the extremity of the body.
Gill opening on the side of the neck. closed in the adults.
Bones of skull united into a solid mass.
Internal nostrils on the hinder part of the palate, surrounded by bone.
Jaws with a series of teeth.
Palate with an arched series of teeth in the centre, parallel to the maxillary one, and before the internal nostrils. See *Dugès, Batr.* t. 14. f. 93. 95. copied t. 4. f. 19.

Amphibia Serpentes (part.) *Linn. S. Nat.* i. 349.
Abranchia *Hogg, Ann. N. H.* 1839. 270.
Batrachii apoda *Oppel. Rept.* 1811; *Merrem, Tent.* 1820.
Cœciliæ hedræoglossæ *Wagler, Syst.* 1830.
Amph. apoda *Gray, Ann. Phil.* 1825; *Bell, Todd's Cyclop. Med.* 1835, 237.
Amph. menopneumena abranchia *Hogg*, l. c. 18. 1839.
Cécilies *Blainv. N. Ann. Mus.* 1836.
Ophiosomes ou Céciliodes *Duméril, Compte rendu*, 1839, 22.
Gymnophidia seu Cœcilia *Müller, Isis*, 1831, 710.
A. celatibranchia *Hogg, Ann. and Mag. N. H.* 1841, 361.
Les Serpens nus *Cuvier, Règ. Anim.* ii. 86. ed. 2. ii. 98.
Ophidia gymnodermia *Rafin, Annal. Nat.* 78. 1815.
Lacertæ (Cœcilioidei) *Fitz.; Eichw. Zool. Spec.* iii. 177.
Batrachophidii *Bonap. Dist. Anim. Vert.* 24., *Amph. Eur.* 10. 1839.
Pseudophidiens ou Cécilies *Blainv. Bul. Soc. Philom.* 1816. 119.
Cœcilioidea *Fitz. N. Class.* 63. 1826.
Ophiosoma *Dum. & Bib. Erp. Gen.* viii.
Cœciliadæ *Gray, Ann. Phil.* 1825, 217.; *Hogg, Ann. N. Hist.* 1839, 270., 1841, 361.; *Dum. et Bib. Erp. Gen.* viii.
Cœciliæ *Tschudi, Batr.* 1838, 26.; *Fitz. S. R.* 34.
Epicria *Fitz. S. R.* 34.
Peromeles ou Cæcilioides *Dum. & Bib. Erp. Gen.* viii. 97.
Cœciliidæ *Bonap. Amph. Eur.* 51.
Cœciliina *Bonap. Amph. Eur.* 51.
Ophidio-Batraciens *Duvernoy, Rev. Zool.* 1849, 185.
Apoda *Swains. Cab. Encyc.* ii. 343.

Fam. I. CŒCILIIDÆ.

Character and Synonyma of Order.

Synopsis of Genera.

A. *Muzzle pitted.*

1. Cœcilia. The pit under each nostril.
2. Siphonops. The pit before each eye. Body with broad rings.
3. Ichthyophis. The pit before each eye. Body with narrow rings.

B. *Muzzle not pitted.*

4. Rhinatrema.

A. *Muzzle with Pits on each side.*

1. CŒCILIA.

Head cylindrical. Muzzle prominent. Maxillary and palatine teeth short, strong, conical. Tongue velvety, with two hemispheres corresponding to the inner holes of the nostrils. Eyes seen through the skin, or indistinct. A small pit or false nostril below each nostril.

Cœcilia *Tschudi, Batr.* 26. 55. 90.; *Fitz. S. R.* 34.; *Dum. et Bib. Erp. Gen.* viii. 274.

Obs. Cœcilia nasuta *Herm.* is a fish (*Sphagebranchus*).

1. Cœcilia gracilis.

Body very long and slender, smooth, except near the cylindrical hinder extremity, where there are 15 close circular plaits. Tail rounded, depressed, rounder above. Muzzle broad, rounded.

Cœcilia gracilis *Shaw, Zool.* iii. 597. 1802; *Hempr. Berl. Mag.* 1824, 294.

C. lumbricoidea *Daud. Rept.* vii. 410. t. 92. f. 2. 1802; *Dum. et Bib. H. G.* viii. 275.

C. lumbricoides *Merrem, Tent.* 168.; *Cuv. R. A.* ii. 100.; *Gray* in *Griff. A. K.* ix. 284.

C. vermiformis *Shaw, MS. B. M.*

Osteol. *Dugès, Batr.* t. 14. f. 92—95.

a. In spirits. Wants head, discoloured. Specimen named by G. Shaw, M.D.
Cœcilia gracilis *Shaw.*

b. In spirits. Black.

c. In spirits. Black, wants head. Demerara. Presented by J. Hadfield, Esq.

d. In spirits. Bleached. Shorter.
C. vermiformis *G. Shaw, MS. Brit. Mus.*

e. In spirits. Without head (var.). Thicker, rings wider apart. S. America.

2. Cœcilia tentaculata.

Body cylindrical, rather thick, elongate, with 150 sometimes incomplete rings. Muzzle broad, rounded. Tail rounded.

Cœcilia albiventris *Daud. Rept.* vii. 422. t. 92. f. 2. 1802; *Cuv. R. A.* ii. 100.; *Gray, Griffith's A. K.* ix. 283.; *Dum. et Bib. H. G.* viii. 277.

C. tentaculata *Shaw, Zool.* iii. t. 136, 1802.

a. In spirits. Specimen named by Dr. G. Shaw in Brit. Mus.
Cœcilia tentaculata *Shaw.*

3. Cœcilia compressicauda.

Body elongate, rather thick. Back smooth, with ring-like folds beneath. Muzzle broad, rounded. End of the body compressed, angular above. Cloaca quite terminal.

Cœcilia compressicauda *Dum. & Bib. E. Gen.* viii. 278.

Hab. Cayenne.

4. Cœcilia rostrata.

Body short, rather thick, cylindrical, with 25 circular plaits. Muzzle narrow, obtusely pointed. Tail rounded.

Cœcilia rostrata *Cuv. R. A.* ii. 100.; *Gray, Griff. A. K.* ix. 284.; *Dum. et Bib. Erp. Gen.* viii. 279.

Hab. S. America.

5. Cœcilia oxyura.

Body short, moderately thick, cylindrical, with 180 plaits, the 30 last only surrounding the body. Muzzle rather narrowed. Tail pointed.

Cœcilia oxyura *Dum. & Bib. E. Gen.* viii. 280.

Hab. Malabar. Museum, Paris.

6. CŒCILIA SQUALOSTOMA.

Body cylindrical, deep olive, with confluent yellow spots, with 140 or 144 rings, the 12 hinder not completely surrounding the body. Muzzle prominent, with a slight protuberance rather below and behind the nostril. Eyes not distinct.

Cœcilia squalostoma *Stutchbury, Linn. Trans.* xvii. 362.

Hab. Africa, Gambia. Mus. Bristol Institution.

2. SIPHONOPS.

Head and *body* cylindrical, with broad rings. Muzzle short. Maxillary and palatine teeth strong, pointed, slightly curved. Tongue broad, entire, with vermiform pits. Eyes seen through the skin. A pit or false nostril on the lip, in the middle between the nostrils and the eye.

ANAT. *Duvernoy, Règne Anim. Croch.* t. 36., *Rev. Zool.* 1849, 186.

Siphonops *Wagler, Syst.* 198. (1828); *Tschudi, Batr.* 55. 90.; *Fitz. S. R.* 34.; *Dum. et Bib. Erp. Gen.* viii. 282.

Cœcilia sp. *Mikan, Cuvier.*

1. SIPHONOPS INTERRUPTA.

Body with 86 or 90 equally distanced, nearly regular rings. Muzzle broad, rounded. Tail rounded.

Siphonops annulatus *Wagler, Syst.* 198.; *Dum. et Bib. Erp. Gen.* viii. 282.

Cœcilia annulata *Mikan, Delect. Braz.* t. 11.; *Spix, Braz.* t. 26. f. 1.

C. interrupta *Cuv. R. A.* ii. 100.

a. In spirits. Brazils. Presented by Lord Stuart.
b. In spirits. Brazils. From the Leyden Museum.

2. SIPHONOPS MEXICANA.

Rings on the front half of the body regular, equidistant; of the hinder half twice as close as the upper ones, only encircling the dorsal half of the body. Muzzle slightly narrowed. Tail rounded. Back slate-coloured, beneath white; vent with a white ring.

Siphonops mexicanus *Dum. & Bib. Erp. Gen.* viii. 284.
Amphisbæna versatilis *Johnston, MS. B. M.* 1820.

a, *b*. In spirits. Mexico. Presented by Captain Sir Edw. Belcher, K.C.B., R.N.

c. In spirits. Mexico. Presented by C. Johnston, Esq. Amphisbæna versatilis *Johnston, MS.*

3. ICHTHYOPHIS.

Head depressed, elongate. Muzzle obtuse. Maxillary and palatine teeth slender, acute, hooked. Tongue entire, velvet-like. Eyes distinct. A pit (or tentacle) below the eye, near the edge of the upper lip.—*Body* rather fusiform, with numerous crowded circular folds.

Ichthyophis *Fitz. N. Class.* 63.
Epicrium *Hasselt, Isis*, 1827; *Wagler, Syst.* 198.; *Tschudi, Batr.* 55. 90.; *Fitz. S. R.* 34.
Cœcilia sp. *Linn.*; *Van Hasselt, Isis.* 1827, 565.; *Gray, Ann. Phil.* 1825.

1. Ichthyophis glutinosus.

Body with 325 ring-like plaits; brown, with a white streak on each side. Tail conical.

Ichthyophis Hasselti *Fitz. Verz.* 63.
Epic. Hasselti *Wagler, Isis*, 1828, 743.
Epicrium glutinosum *Dum. & Bib. Erp. Gen.* viii. 286.
Cœcilia glutinosa *Linn. S. N.* i. 393.; *Seba*, ii. t. 25. f. 2.; *Gray*, in *Griff. A. K.* ix. 248.
C. viscosa *Latr. Rept.* iv. 238.
C. hypocyanea *Hasselt, Isis*, 1827, 365.; *Schlegel, Abbild.* t. 39. f. 1. jun.

a. In spirits. Ceylon. Presented by Sir Joseph Banks, Bart. P.R.S.

B. *Muzzle not pitted.*

4. RHINATREMA.

Head depressed, elongate. Muzzle blunt, without any pits. Teeth, maxillary and palatine, slender, acute, bent backwards. Tongue entire, velvety. Eyes distinct.—*Body* rather fusiform, with numerous circular plaits. Black, with a yellow band on each side.

Rhinatrema *Dum. & Bib.* viii. 288.; *Fitz. S. R.* 34.
Cœcilia sp. *Cuvier, R. A.* ii 100.

1. RHINATREMA BIVITTATUM.

Rhinatrema bivittatum *Dum. & Bib. H. G.* viii. 288.
Cœcilia bivittata *Cuv. R. A.* ii. 100.; *Guérin, Icon.* t. 25. f. 2. *Gray* in *Griff. A. K.* ix. 284.
Hab. Cayenne. Mus. Paris.

B. SIRENES. — *Nostrils not enclosed in a bony case; the internal one in front, between the lips and the bones of the palate. Maxillary bones none, or rudimentary. Palate and lower jaw toothed.*

Cuvier (*Oss. Fos.* v. 240.) observes that the internal nostril is the character which best separates these animals from fish. See also Owen (*Linn. Trans.* xviii. 327.).

ORDER IV. PSEUDOICHTHYAS.

Body elongate, fish-like; covered with imbricated oval scales; and with dorsal and caudal membranes resembling fins, strengthened with soft jointed rays.

Legs four, rudimentary, elongated, subulate.
Gill external, under side tufted; internal, on the edge of some of the septa between the gill openings. *Melville.*
External *nostrils* not enclosed in a bony case; the internal ones between the lips and the bones of the palate.
Maxillæ none. Intermaxillæ very small, with one or two teeth.
Palatine *teeth* very large. Lower jaw with large teeth. t. 4. f. 20.
Heart with two auricles.
Lungs equal.
Trachea, on ventral face of digestive tube.

Amph. diplopneumena fimbribranchia *Hogg, Ann. and Mag. N. H.* 1841, 362.
Pisces (part.) *Owen, Trans. Linn. Soc.* xviii. 1839, *Ann. and Mag. N. H.* iii. 265., *Ann. Sci. Nat.* x. 371.; *Bonap. Pisces Europ.*
Amphibia (part.) *Bichoff, Mem. Leipzig*, 4to, 1840, and in *Ann. Sci. Nat.* 1840; *Jones, Outlines of Animal King.* 538.; *M. Edwards, Ann. Sci. Nat.* 1840, 159., and in *Ann. and Mag. N. H.* 1841, 468.; *Schlegel, Faun. Japon.* 121.
Ichthyo-Batraciens *Duvernoy, Rev. Zool.* 1849, 188.

Fam. I. LEPIDOSIRENIDÆ.

Synopsis of Genera.

1. Lepidosiren. Ribs fifty-five pair.
2. Protopterus. Ribs thirty-six pair.

1. LEPIDOSIREN.

Ribs 55 : 55.—*Body* elongate.—*Limbs* anterior, simple.

Lepidosiren *Fitzinger; Wiegmann, Arch.* 1837, 232.; *Natterer, Annal. Wiener Mus.* 1837, ii. 165.; *Owen, Linn. Trans.* xviii. 327.; *Bischoff, Mém. Anat.* 1840, *Ann. Sci. Nat.* 1840, 159. *Ann. N. Hist.* vi. 466., vii. 362.; *Fitz. S. R.* 34.; *Schlegel, Faun. Japon.* 121.

Amphibichthys *Hogg, Ann. and Mag. N. H.* 1841, 362.

1. Lepidosiren paradoxa. Caramuru.

Lepidosiren paradoxa *Fitz. Ann. Wiener Mus.* 1837, ii. 165. t. *Bischoff, Mém. Anat., Ann. Sci. Nat.* 1840.

Osteol. *Ann. Sci. Nat.* 1840, t. .

Hab. Brazils. Mus. Vienna.

2. PROTOPTERUS.

Ribs 36 : 36.—*Body* short, tapering. — *Limbs* anterior, simple.

Lepidosiren sp. *Owen, Linn. Trans.* xviii. 327., *Odont.* t. 59. t.; *Milne-Edwards, Ann. Sci. Nat.* 1840, 371., *Ann. and Mag. N. H.*, 1841, 466. 497.; *Hogg, Ann. and Mag. N. H.* vii. 1841; *Jones, Outlines of Anim. K.* 538.; *Jardine, Ann. and Mag. N. H.* 1841, vii. 21.; *Melville, Rept. Brit. Assoc.* 1847; *Müller, Ann. and Mag. N. H.* 1845, 348.

Protopterus *Owen, Cat. Col. Surg. MS., Linn. Trans.* xviii. 332.

Protomelus *Hogg, Ann. and Mag. N. H.* vii. 359. note, 1841.

Rhinocryptis *Peters; Müller, Obers. Berl. Acad.* 1844, and *Ann. and N. H.* 1845, 348.

1. Protopterus annectens.

Lepidosiren annectens *Owen, Linn. Trans.* xviii. 322.; *Jardine, Ann. and Mag. N. H.* 1841, vii. 21. fig. p. 24, 25.; *Melville, Rept. Brit. Assoc.* 1847.

Osteol. t. 4. f. 20. *Owen, Linn. Trans., Odont.* t. 59.

a—d. In spirits. Gambia. Presented by the Earl of Derby
e—f. In spirits. Gambia. Presented by J. Gates, Esq.

2. Protopterus rhinocryptis.

Rhinocryptis amphibia *Müller, Obers. Berl. Acad.* 1844, *Arch. Phys.* 1845. t. ; *Ann. and Mag. N. H.* 1845, 348.

Anat. *Müller*, l. c.

Hab. Quillemane. Dr. Peters, Mus. Berlin. " The same as the preceding." *Dr. Melville.*"

Order V. MEANTIA.

Body elongate, naked, smooth.
Legs two or four, rudimentary, weak, with short weak toes.
Gills external, well developed, permanently developed during the whole life of the animal.
Nostrils not enclosed in a bony case; the inner ones opening between the lips and the palatine bones.
Eyes small, without eyelids.
Maxillæ rudimentary or wanting; intermaxillæ toothed.
Palate and *lower jaw* toothed. *See* t. 4. f. 16. 17.

Sebæ, seu Reptilia caudata (part.) *Scopoli, Introd. H. N.* 463. 1777.
Meantia *Rafin. Annal. Nat.* 78. 1815.
Amphibia amphipneusta (part.) *Gray, Ann. Phil.* 1825, 215.; *Bell, Todd's Cyclop. Med.* 1835.
Sirenes *Linn.; Gray, Ann. Phil.* 1825, 215.
Sirenidæ *Gray, Ann. Phil.* 1825, 215.; *Bonap. Distr. A. Vert.* 27., *Amph. Eur.*
B. Grad. amphipneusta *Merrem, Tent.* 1820.
Amph. perennibranchia Ichthyoida *Latr. Fam. Nat.* 1825.
Ord. Manentibranchia *Hogg, Ann. N. H.* 1839.
Ichthyodi hedræoglossi (s. 2.) *Wagler, Syst.* 1830.
Reptilia malacoderma amphibia *Kirby, Bridgw. Treat.* ii. 415.
A. dipoda et tetrapoda (part.) *Hogg*, l. c.
A. anguiformia et pisciformia (part.) *Hogg*, l. c.
Diplopneumena externibranchia *Hogg*, l. c. 18. 1839.
Proteidea *Müller, Isis*, 1831, 710.
Peromeles (part.) *Dum. & Bib. Erp. Gen.*

A. manentibranchia *Hogg, Ann. and Mag. N. H.* 1841, 362.
Proteideæ *Tschudi, Batr.* 1828, 26.
Phanerobranchideæ *Fitz.; Holbrook, N. A. Herp.* 101.
Ichthyoidei *Eichw. Zool. Spec.* iii. 163.
Ichthyodi (part.) *Bonap. Amph. Eur.* 11. 1839.
Amphibiens ou Proteus ou Sirens *Blainv. Bull. Soc. Philom.* 1816, 119.
Subichthiens *Blainv. Org. Anim.* t. 5. 1822.
Ichthyodea branchiata *Fitz. Syst. R.* 35.
Perennibranchia, or Phanerobanchia *Bonap. Distr. An. Vert.* 1832.
Exobranches ou Proteoides *Dum. & Bibr. Erp. Gen.* viii. 94.
B. U. trematodera β. *Baird, J. A. N. Phil.* 1849, 290.
A. Amphipneura *Swains. Cab. Cyc.* ii. 339. 1839.

Synopsis of Families.

I. *Proteidæ.* Legs four, weak. Tail compressed. Palate with a single series of teeth on the front edge of the vomerine bone.

II. *Sirenidæ.* Legs two, anterior. Body subcylindrical. Palatine teeth in numerous cross series on the vomerine bone.

Fam. I. PROTEIDÆ.

Limbs four, weak.
Tail compressed.
Gill-flaps distinct.
Palatine teeth in two long series on the front edge of the vomerine bones. t. 4. f. 16.

Proteina *Gray, Ann. Phil.* 1825, 215.
Ichthyoida (part.) *Latr. Fam. Nat.* 1825.
Proteidæ *Hogg, Ann. N. Hist.* 1839.
Hypochthonina *Bonap. Amph. Eur.*

Synopsis of Genera.

1. Proteus. Head long, truncated in front. Toes 3 : 4. Tail short, compressed. Maxillary bone incomplete, toothless.

2. Necturus. Head broad, depressed. Toes 4 : 4. Tail compressed. Maxillary bone complete, toothed.

1. PROTEUS.

Head oblong, truncated. Eyes very small. Maxillary teeth none. Palatine teeth in two long series. t. 4. f. 16. Tongue not to be distinguished. — *Gills* large, 3 : 3. on each side, fringed. — *Feet* four.—*Toes* 3 : 4. — *Tail* short, compressed. — *Body* elongate, cylindrical. — *Skin* smooth.

Proteus (sp.) *Laur. Rept.* 37. 1788; *Schneider, Amph.* i. 31.
Proteus *Schreiber, Phil. Trans.* 1801; *Latr. Rept.* iv. 310.; *Daud. Rept.* viii. 263.; *Michah, Isis*, 1830, 190.; *Cuvier, R. An.* ii. 102., *Oss. Fos.* v. 427. (not Müller.)
Larvarius *Rafin. Annal. Nat.* 78. 1815.
Platyrhynchus *Leuckart, Equo Bisulco*, 4. 1816.
Hypochthon *Merrem, Tent.* 188. 1820; *Gray, Ann. Phil.* 1825, 215.; *Tschudi, Batrac.* 97.; *Fitz. S. R.* 35.

1. Proteus anguinus.

Pale bluish, becoming darker when exposed.

Proteus anguinus *Laur. Rept.* 37. t. 4. f. 3.; *Schreib. Amph.* i. 45. *Phil. Trans.* 1801; *Configliachi et Rusconi, Prot. Ang.*; *Latr. Rept.* ii. 306.; *Daud. Rept.* viii. 266.; *Cuvier* in *Humb. Obs. Zool.* i. 119. t. 13. f. 5. —10. 102.
Siren anguinus *Shaw, Zool.* iii. 608.
Hypochthon Laurentii *Merrem, Tent.* 188.; *Fitz. N. Class*, 66., *S. R.* 35.; *Gray, Ann. Phil.* 1825, 215.
H. anguinus *Bonap. Amph. Eur.* 94.; *Tschudi, Batr.* 97.
P. Laurentii, P. Freyeri, R. Schreibersii, R. Zoysii, P. Carrariæ, and P. xanthostictus *Fitzinger, Mus. Vienna.*

Osteol. t. 4. f. 16. *Cuvier, Humboldt, Obs. Zool.* i. 413. (skelet.), *Oss. Fos.* v. 427. t. 27. f. 14, 15.

a. In spirits. Adult. Carniola.
S. anguinus *Shaw, B. M.*
b—*d*. In spirits. Nearly adult. Carniola
e, f. In spirits. Young. Carniola. Presented by M. Drummond, Esq.
g. In spirits. Nearly adult. Carniola. Presented by B. Tyndall, Esq.
h. In spirits, Young. Carniola? Presented by Miss Bell.
i. In spirits. Half-grown. Carniola?
k. In spirits. Adult. Krain, Magdalenengrotte.
P. anguinus *Schreber.*
l. In spirits. Adult. Krain. From the Vienna Museum.
P. Laurentii *Fitzinger.*
m. In spirits. Adult. Krain. From the Vienna Museum.
P. Freyeri *Fitzinger.*

n, o. In spirits. Adult. Krain and Adelsburg. From the Vienna Museum.
P. Schreibersii *Fitzinger.*

p. In spirits. Adult. Krain. From the Vienna Museum.
P. Zoysii *Fitzinger.*

q. In spirits. Adult. Presented by Professor Carrara.
P. Carrarae *Fitzinger.*

2. NECTURUS.

Head large, broad, depressed. Mouth large. Lip thick, fleshy. Eyes small. Jaws with a single series of conical pointed teeth. Palate with a long arched series of teeth on the front of the vomerine bones, concentric with the maxillary teeth. Pterygoid teeth few. Tongue broad, full in front, free and movable at the tip and front of the sides. Spiracles two on each side.—*Gill* large, three-lobed, each concealing the spiracles.—*Feet* four. Toes 4 : 4, clawless.—*Body* nearly smooth.—*Tail* compressed.

Protonopsis (part.) *Barton on Siren Lacertina.*
Proteus sp. *Barnes; Mitchell, Silliman's Jour.* iv.; *Lacép. Ann. Mus.* x. 230.; *Mayer, Anal.* 82.
Necturus *Rafin. Jour. Phys.* lxxxviii. 417. 1819; *Annal. Nat.* 1820; *Wagler, Syst.* 210.; *Fitz. S. R.* 35.
Menobranchus *Harlan, Annal. N. Y. Lyc.* i. 221. 1825, *Journ. Acad. N. S. Philad.* iv. t. 21.; *Gray, Ann. Phil.* 1825, 216.; *Tschudi, Batr.* 97.; *Cuvier, R. A* ii. 119.
Salamandra sp. *Schneid. Amph.* i. 50.
Triton (larva?) *Say, James's Travels,* i. 5. 203. 1823; *Jour. Acad. N. S. Philad.* 111.
Exobranchia *Rafin. Annal. Nat.* 78. 1815.
Phanerobranchus *Fitz. N. Class.* 43. 68. 1826.
Sirena sp. *Rafin. Amer. Month. Mag.* iv. 41. 1818.

1. NECTURUS MACULOSUS.

Dusky cinereous grey, with irregular subcircular darker spots; a dark streak from nose over the eyes.

Salamandra sp.? e lacu Champlain *Schneider, Amph.* i. 50. 1799.
Proteus tetradactylus *Lacép. Ann. Mus.* x. 230. t. 17. 1807.
Menobranchus Lacepedii *Gray* in *Griff. A. K.* ix. 108.
Phanerobranchus Lacepedii *Fitz. N. Class,* 66. (1826.)
Menobranchus tetradactylus *Harlan, Jour. Acad. N. S. Phil.* v. 324.; *Gray, Ann. Phil.* 1825. 216.
Sirena maculosa *Rafin. Am. Monthly Mag.* iv. 41. 1818.

Necturus maculatus *Rafin.*; *Blainv. Jour. Phys.* lxxxviii. 417. 1819; *Baird*, l. c. 1849, 291.
Necturus maculosus *Rafin. Annals of Nat.* 1820.
N. luteus *Rafin. Annals of Nat.* 1820.
N. phosphoreus *Rafin. Annals of Nat.* 1820.
N. lateralis *Wagler, Syst.* 210.; *Fitz. S. R.* 35.
Menobranchus Sayii *Gray, Ann. Phil.* 1825, 216.
Proteus of the Lakes *Mitchell, Amer. Jour. Arts and Sciences*, iv. 181. vii. 63.
Menobranchus maculatus *Holbrook, N. Amer. Herp.* viii. t. 29. 1842.
Proteus maculatus *Barnes, Amer. Jour. Arts and Sci.* xi. 268. 1827, xiii. 68.
Men. lateralis *Harlan, Ann. N. Y. Lyc.* i. 221. 1825, *Med. and Phys. Res.* 89.; *Neuwied, Trav. N. Amer.* iii. 245.
Salamandra alleghaniensis jun. *Daud. Rept.* viii. 231.; *Say, Jour. Acad. N. S. Phil.* iv. t. 21.
Protonopsis horrida (part.) *Barton on Siren.*
Triton lateralis *Say, James's Exped. Rocky Mountains*, i. 5. 302. 1823.

a. In spirits. Half-grown. N. America, Ohio. From the Leyden Museum.
b. In spirits. Not good state. N. America.
c. In spirits. Adult. N. America. Presented by John Edw. Gray, Esq.

2. NECTURUS LATERALIS.

Head large, flattened above. Muzzle truncated. Body elongate, dusky brown, with a dark streak from nostril through the eye, and along each side to the tail.
Triton lateralis *Say, Long's Exped. Rocky Mount.* i. 300., 5. 103.
Menobranchus lateralis *Harlan, Med. and Phys. Res.* 89.; *Holbrook, N. A. Herp.* v. 115. t. 28.

Hab. Mississippi.

3. NECTURUS n. s. *Gibbes*, fide *Baird, J. A. N. Phil.* 1849, not described.

Hab. Santee River, S. Carolina.

FAM. II. SIRENIDÆ.

Limbs two, anterior, small.
Body subcylindrical, rather compressed behind.

Operculum none.
Teeth in each jaw.
Palate with numerous cross series of teeth on the vomerine bones. t. 4. f. 17.

Living in moist clay, rarely in water, but can swim well.

Sirenina *Gray, Ann. Phil.* 1825, 216.
Sirenidæ *Bonap. Amph. Eur.* 32.; *Hogg, Ann. N. H.* 1839.
Ichthyoida (part.) *Latr. Fam. Nat.* 1828.
Sirenes (part.) *Fitz. S. R.* 35.
Proteideæ (part.) *Tschudi, Batr.* 96.
Meantes *Linn. S. N.* i. addend.

Synopsis of Genera.

1. SIREN. Fingers four. Gills ciliated.
2. PSEUDOBRANCHUS. Fingers three. Gills not ciliated.

1. SIREN.

Head oblong, subquadrate, short. Mouth small. Eyes very small. Maxillary and intermaxillary teeth none. Palatine teeth numerous on the front of outer side, in many oblique cross series on the vomerine bone (t. 4. f. 17.). Tongue small, arrow-shaped, rather rounded in front, only free at the tips and front of sides. —*Gills* three on each side, small; spiracles three on each side under the gills.—*Feet* two, anterior, small.—*Fingers* four.—*Body* cylindrical, elongate.—*Skin* smooth.

Siren *Linn. S. N.* i. add., *Amœn. Acad.* vii. 311. 1766; *Schneid. Amph.* i. 48.; *Scopoli. Int. H. N.* 463. 1777; *Latr. Rept.* ii. 159.; *Daud. Rept.* viii. 269. 438.; *Cuvier, R. A.* ii. 102.; *Merrem, Tent.* 188.; *Gray, Ann. Phil.* 1825, 46.; *Tschudi, Batr.* 69—98; *Fitz. S. R.* 35.; *Holbrook, N. A. Herp.; Baird,* l. c. 1849, 291.
Sirena *Rafin. Annal. Nat.* 78. 1818.
Muræna sp. *Gmelin, S. N.* i. 1136.
Larvæ lacertæ *Pallas? Nov Comm. Petrop.* xix. 438. 1775; *Linn. S. N.* i. 371. note.

1. SIREN LACERTINA. Siren, or Mud Eel.

Black, with numerous white specks; beneath purplish.

Mud Iguana *Ellis, Phil. Trans.* lvi. 189. t.
Muræna Siren *Gmelin, S. Nat.* i. 1136.
Siren lacertina *Linn. Amœn. Acad.* vii. 311. 1766; *Syst. Nat.* add. 2. t. 99. f. 2.; *Shaw, Zool.* iii. 601.; *Baird,* l. c. 291.
Siren *Penn. Arct. Zool.* 325.

Sirene *Camper, Schrift. Berlin. N. F.* vii. 482.; *Cuvier* in *Humb. Obs. Zool.* i. 28. t. 11. 14. f. 1. 9., *R. A.* ii. 120.; *Shaw, Zool.* iii. 601.; *Schneider, Amph.* i. 48.; *Daud. Rept.* viii. 272.; *Merrem, Tent.* 188.; *Harlan, Med. and Phys. Res.* 88.; *Fitz. S. R.* 35.; *Holbrook, N. A. Herp.* t. 34.

Osteol. t. 4. f. 17. *Cuv. Humb. Obs. Zool.* i. 98.; ii. t. 14. f. 9. *Oss. Fos.* v. t. 27. f. 1—6.

a. In spirits. N. America. Presented by Dr. Garden.

2. Siren intermedia.

Dusky bluish black. Gills three-lobed, reticulated and fringed below.

Siren intermedia *Leconte, Ann. Lyc. N. Y.* 53. 1828; *Harlan, Med. and Phys. Res.* 89.; *Wagler, Syst.* 318.; *Holbrook, N. A. Herp.* v. 107. t. 35.; *Cuvier, R. A.* ii. 121.

Siren lacertina (half-grown) *Schlegel, Faun. Japon.*

a. In spirits. Texas. Mr. Ward's Collection.

2. PSEUDOBRANCHUS.

Head suboval, flattened. Muzzle rather pointed. Eyes rather large. — *Fingers* three. — *Gill* three-lobed, fimbriated on the edges, the front lobe very small. Spiracle one on each side.

Pseudobranchus *Gray, Ann. Phil.* 1825, 216.; *Fitz. N. Class.* 43. 1826, *S. R.* 35.

Parvibranchus *Hogg, Ann. N. H.* 1839, 6. note.

Siren sp. *Leconte, Ann. N. Y. Lyc.* i. 52. 1824; *Tschudi Batr.* 98.

Sirenoide *Schlegel, Faun. Japon.* 121.

1. Pseudobranchus striatus.

Body dusky, with a broad brown stripe on each side, and another rather paler on each side of the belly.

Siren sp. *Mitchell* in *Cuv. Oss. Fos.* v. 419. (1822.)

Siren striata *Leconte, Ann. Lyc. N. York*, i. 54. t. 4. 1824, ii. 133.; *Harlan, Med. and Phys. Res.* 88.; *Wagler, N. S.* 310.; *Tschudi, Batr.* 98.; *Cuvier, R. A.* ii. 121.; *Baird*, l. c. 291.

Pseudobranchus striatus *Gray, Ann. Phil.* 1825.; *Fitz. S. R.* 35.

Siren lacertina jun. *Schlegel, Faun. Japon.* 121.

Hab. N. America. Mus. Le Conte.

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